

No. 1926

HANDBOOK OF THE AUTOMATIC MACHINE RIFLE

CALIBER .30, MODEL OF 1909

WITH

PACK OUTFITS AND ACCESSORIES

—
TWENTY-TWO PLATES
—

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WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, July 31, 1916.

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By order of the Secretary of War:

WILLIAM CROZIER,
Brigadier General, Chief of Ordnance.

(3)

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EQUIPMENT OF MACHINE-GUN COMPANY OR TROOP.

Each machine-gun company or troop is provided with four rifles, including ammunition, spare parts, tools, and accessories, together with the necessary packs.

The equipment for each company or troop is carried on sixteen mules, constituting four sections of four each. The sections are essentially complete units, although certain articles are not carried in every section.

The equipment of each section consists of one rifle, ammunition, and the necessary equipment for maneuvering the piece in the field.

The description is divided into the following parts:

Part I. The rifle with its ammunition and accompanying parts.

Part II. The pack harness.

Part III. The special pack equipment.

Part IV. The pioneer tools.

Part V. The total equipment of a machine-gun company or troop.

PART I. THE RIFLE WITH ITS AMMUNITION AND ACCOMPANYING PARTS.

DESCRIPTION OF THE AUTOMATIC MACHINE RIFLE, CALIBER .30, MODEL OF 1909.

GENERAL.

[Plates I, II, III, and IV.]

The automatic machine rifle, caliber .30, model of 1909, belongs to that type of automatic arms known as the gas operative. The power that is used to operate the mechanism is obtained from a small portion of the powder gases that enter through a port in the barrel after the bullet has passed. After the first shot the rifle is self-operative, until the ammunition in the feed strip is exhausted or until the trigger is released.

The ballistics of the automatic machine rifle, caliber .30, model of 1909, are similar to those of the service rifle, and the data given in the handbook of the service rifle, No. 1923, is equally applicable to the automatic machine rifle, caliber .30, model of 1909. The bullet suffers a slight decrease in muzzle velocity due to the gas used in operating the rifle, but for general purposes the data quoted is sufficiently accurate.

In firing, the action of the mechanism is as follows:

When the rifle is fired and the bullet has passed the gas port in the barrel a part of the powder gas passes into the chamber of the gas-nozzle ring, and enters the gas cup of the actuator, forcing the latter to the rear. The actuator in recoiling compresses the actuator spring, the cam surface cut in its upper portion engaging the lug of the ferreture nut, causing the latter to rotate so as to disengage its threads from those of the breechblock. At this part of the recoil the firing pin, which has been drawn back by the actuator, engages its upper lug in the ramp of the receiver. The firing pin then rotates on its axis and its upper lug comes to rest in the transverse cut of the breechblock, thus locking the latter to the actuator. The large lug of the actuator strikes against the shoulder of the breechblock, drawing the latter to the rear and thereby completing the opening of the breech. The claw of the extractor engages the groove of the cartridge case and draws it from the chamber. During the recoil of the breechblock the head of the cartridge case strikes against the ejector, throwing the case out of the rifle through the ejection opening in the receiver. When the actuator is partly recoiled the cam surface cut on its right side engages the upper lug of the feed piece, causing the



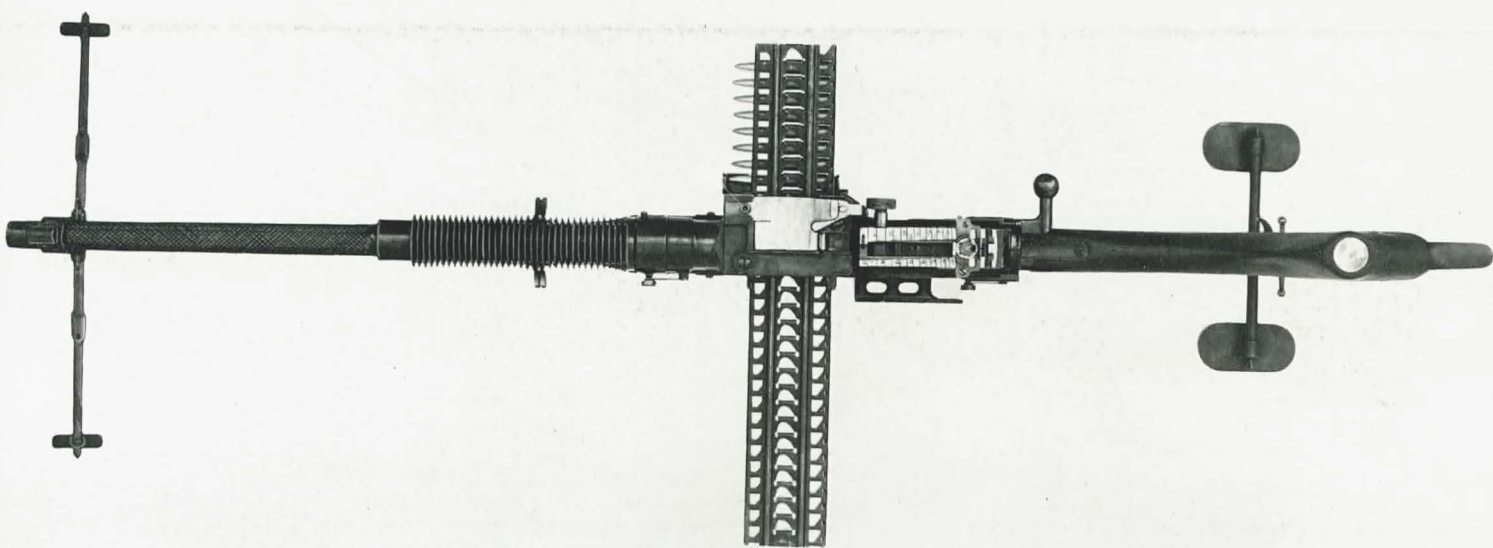


PLATE III

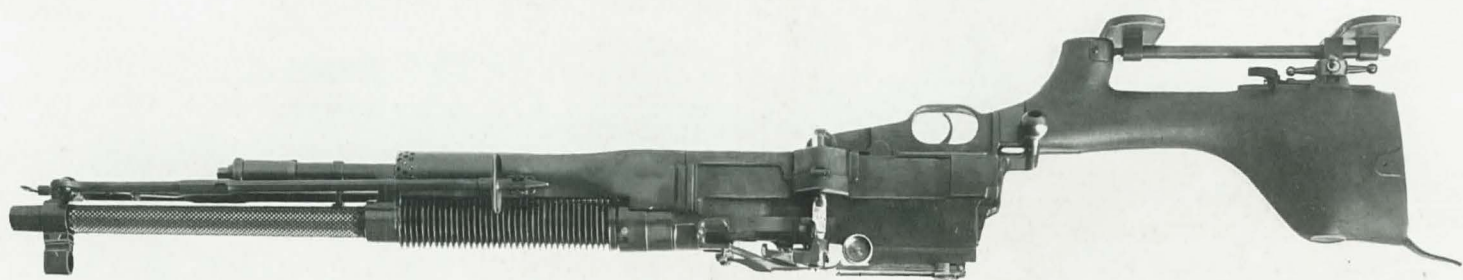
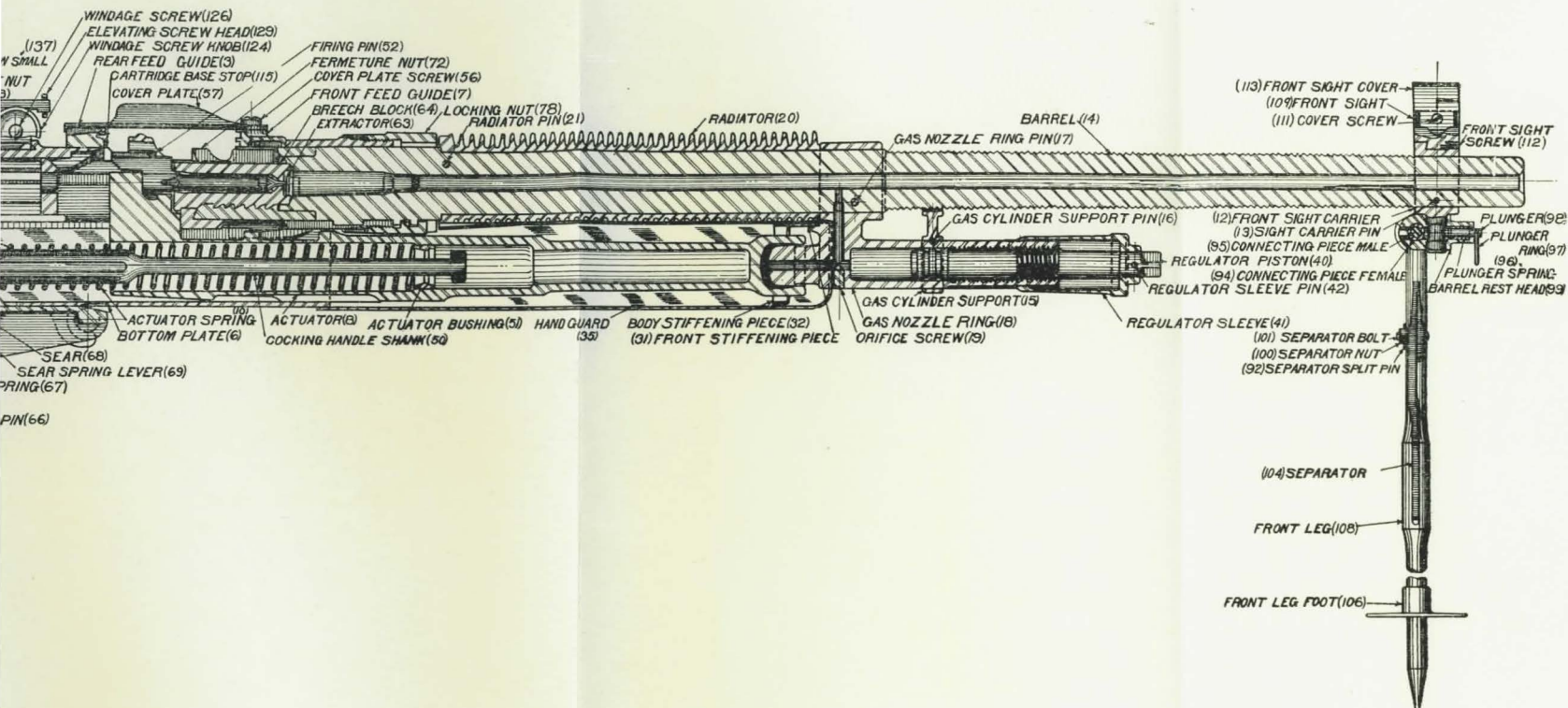
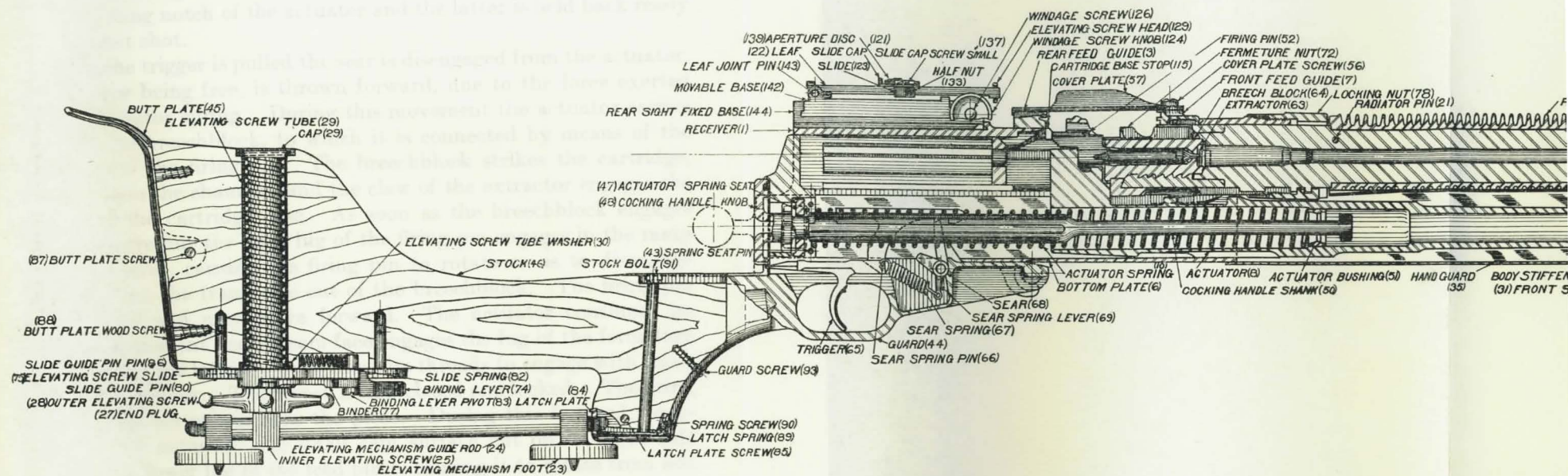


PLATE II

PLATE IV





latter to rotate from right to left on its axis. The feed arm of the feed piece engages its feed lug in the central opening of the feed strip, forcing the latter into the rifle and placing a cartridge in the loading position in front of the chamber. The pawl of the feed-piece spring engages in the lateral openings of the feed strip, thereby holding the latter in place and preventing it being drawn to the right when the feed arm of the feed piece, having advanced the feed strip one notch, returns to its original position by sliding over the feed strip in order to engage in the next hole. Finally, when the actuator is almost recoiled (supposing the rifle to be set for single shots), the sear engages in the cocking notch of the actuator and the latter is held back ready for the next shot.

When the trigger is pulled the sear is disengaged from the actuator, which, now being free, is thrown forward, due to the force exerted by the actuator spring. During this movement the actuator carries forward the breechblock, to which it is connected by means of the large lug of the firing pin. The breechblock strikes the cartridge, forces it into the chamber, and the claw of the extractor engages the groove of the cartridge case. As soon as the breechblock engages the fermeture nut the large lug of the firing pin engages in the ramp of the receiver, causing the firing pin to rotate so as to disengage this lug from the transverse cut of the breechblock. The firing pin is then free and may move forward. The actuator continues its forward movement and its cam face engages the lug of the fermeture nut, rotating the latter so as to cause its threads to engage with those of the breechblock. The breech is now closed and locked. The firing pin striking the primer fires the piece. During this forward movement of the actuator, the small cam surface cut on its right side engages the lower lug of the feed piece, causing it to rotate from left to right. The feed arm is actuated by this movement, and its feed glides over the feed strip and engages in the next opening of the latter, ready to feed the feed strip another notch into the rifle when the actuator again recoils.

The maximum fire obtainable with this arm is about 400 shots per minute. The rapidity of fire can be regulated to some extent by the regulator.

The following table gives a serial list of component parts of this rifle:

SERIAL LIST OF COMPONENT PARTS.

[Numbers before components refer to numbers shown on Plates IV, V, VI, VII, VIII, and IX. Property classification: Class IV, section 1.]

- | | |
|-------------------------------------|--------------------------|
| 1. Receiver. | 6. Bottom plate. |
| 2. Ejector bushing. | 7. Front feed guide. |
| 3. Rear feed guide. | 8. Actuator. |
| 4. Feed-guide assembling screw (7). | 9. Actuator bushing pin. |
| 5. Bottom-plate rivet (11). | 10. Actuator spring. |

11. Barrel rest (complete).
12. Front sight carrier.
13. Sight-carrier pin.
14. Barrel.
15. Gas-cylinder support.
16. Gas-cylinder support pin.
17. Gas-nozzle ring pin.
18. Gas-nozzle ring.
19. Orifice screw.
20. Radiator.
21. Radiator pin.
22. Locking-nut stop.
23. Elevating-mechanism feet (2).
24. Elevating-mechanism guide rod.
25. Inner elevating screw.
26. Elevating-mechanism foot pins (4).
27. End plug (2).
28. Outer elevating screw.
29. Elevating-screw tube, with cap.
30. Elevating-screw tube washer.
31. Front stiffening piece.
32. Body stiffening piece.
33. Assembling plates (2).
34. Hand-guard rivet, short (6).
35. Hand guard.
36. Catches for barrel rest leg (2).
37. Hand-guard rivet, long (8).
38. Leg catch spring (2).
39. Hand-guard rivets, short (10).
40. Regulator piston.
41. Regulator sleeve.
42. Regulator-sleeve pin.
43. Spring-seat pin (2).
44. Guard.
45. Butt plate.
46. Stock.
47. Actuator-spring seat.
48. Cocking-handle knob.
49. Cocking-handle rivet (3).
50. Cocking-handle shank.
51. Actuator bushing.
52. Firing pin.
53. Closing spring.
54. Feed-piece housing cover.
55. Feed-piece spring button (2).
56. Cover-plate screw.
- 56a. Cover-plate screw washer.
57. Cover plate.
58. Feed-piece spring.
59. Feed-piece spring stud.
60. Feed-piece spring-stud rivet (2).
61. Feed-piece spring-pawl rivet (2).
62. Feed-piece spring pawl.
63. Extractor.
- 63a. Dismounting tool (extractor).
64. Breechblock.
65. Trigger.
66. Sear-spring pin.
67. Sear spring.
68. Sear.
69. Sear-spring lever.
70. Locking screw (2).
71. Feed piece.
72. Fermeture nut.
73. Extractor spring.
74. Binder lever.
75. Elevating-screw slide.
76. Elevating-screw slide pin.
77. Binder.
78. Locking nut.
79. Hand-guard stud.
80. Slide-guide pins (2).
81. Binder spring.
82. Slide spring.
83. Binder lever pivot.
84. Latch plate.
85. Latch-plate screw.
86. Slide-guide pin pins (2).
87. Butt-plate screw.
88. Butt-plate screw, wood (2).
89. Latch spring.
90. Spring screw.
91. Stock bolt.
92. Separator split pin.
93. Guard screw.
94. Connecting piece, female.
95. Connecting piece, male.
96. Plunger spring.
97. Plunger ring.
98. Plunger.
99. Barrel-rest head.
100. Separator nut.
101. Separator bolt.
102. Separator-bolt pin.
103. Separator axis (2).
104. Separator (2).
105. Front-leg axis (2).
106. Front-leg feet (2).
107. Foot rivets (2).
108. Front leg (2).
109. Front sight.
110. Hinge pin.
111. Cover screw (2).
112. Front-sight screw.
113. Front-sight cover.
114. Cartridge-stop spring.
115. Cartridge-base stop.
116. Ejector spring.

117. Ejector cap.
118. Ejector.
119. Cartridge stop.
120. Cartridge-stop holder.
121. Slide cap.
122. Leaf.
123. Slide.
124. Windage-screw knob.
125. Windage-screw pin.
126. Windage screw.
127. Windage-screw spring.
128. Windage-screw collar.
129. Elevating-screw head.
130. Elevating-screw pin.
131. Elevating screw.
132. Half-nut spring.
133. Half nut.
134. Pivot.
135. Pivot spring.
136. Fixed-base screw.
137. Slide-cap screw, small.
138. Slide-cap screw, large.
139. Aperture disk.
140. Base spring.
141. Drift slide.
142. Movable base.
143. Leaf-joint pin.
144. Rear-sight fixed base.
145. Dismounting wrench.
146. Ejector key.
147. Resizing-tool frame.
148. Adjusting screws (2).
149. Resizing-tool roller.
150. Blocking screws (4).
151. Resizing-tool roller support.
152. Cleaning-rod handle and sleeve.
153. Cleaning-rod stem and sleeve.
154. Cleaning-brush holder.
155. Rammer.
156. Defective-cartridge extractor.
157. Hand extractor.
158. Screw driver.
159. Copper hammer.
160. Drift.
161. Loading-tool handle.
162. Lever axis.
163. Lever (one right, one left).
164. Loading-tool foot (2), short.
165. Pushing-bar guide slide.
166. Screw (4 long, 8 medium, 4 short).
167. Strip guide.
168. Loading-tool foot (long), 1.
169. Pushing bar.
170. Pushing-bar axis.
171. Pushing-bar guide.
172. Pliers.
173. Grease brush.
174. Cleaning brush.
175. Feed strip.
176. Oil can, including nozzle cap and chain.
177. Gas-cylinder cleaner.
178. Cooling sponge.
179. Grease pot.
180. Sight-bracket screws (3).
181. Telescopic-sight bracket.

DETAILED DESCRIPTION OF THE RIFLE COMPONENTS.

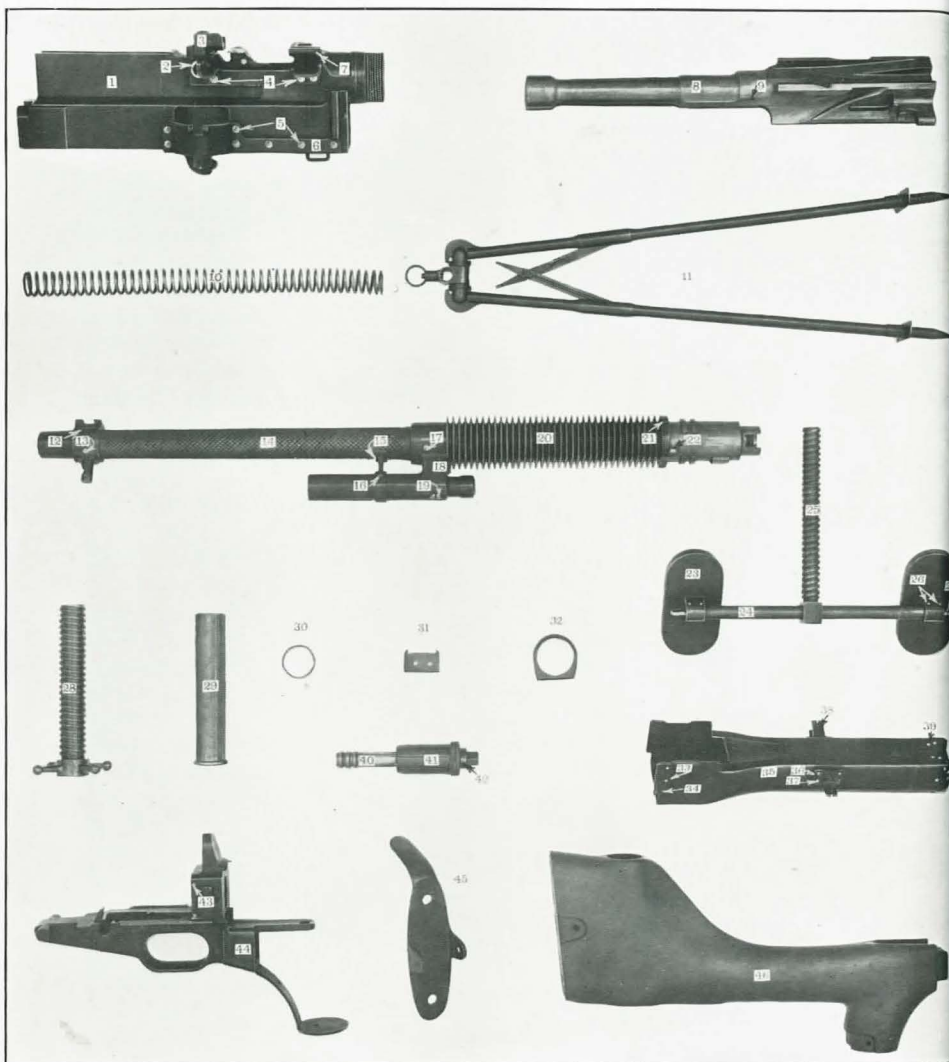
The component parts of the rifle arranged alphabetically are given in the following list:

[Numbers after components refer to numbers shown on plates. Property classification: Class IV, section 1.]

- | | |
|---------------------------------|------------------------------------|
| Actuator (8). | Binder (77). |
| Actuator bushing (51). | Binder spring (81). |
| Actuator-bushing pin (9). | Binder lever (74). |
| Actuator spring (10). | Binder-lever pivot (83). |
| Actuator-spring seat (47). | Blocking screws (150) (four). |
| Adjusting screws (148) (three). | Body-stiffening piece (32). |
| Aperture disk (139). | Bottom plate (6). |
| Assembling plates (33) (two). | Bottom-plate rivet (5) (eleven). |
| Barrel (14). | Breechblock (64). |
| Barrel rest (complete) (11). | Butt plate (45). |
| Barrel-rest head (99). | Butt-plate screw (87). |
| Base spring (140). | Butt-plate screw, wood (88) (two). |

- Cartridge-base stop (115).
- Cartridge stop (119).
- Cartridge-stop holder (120).
- Cartridge-stop spring (114).
- Catches for barrel-rest leg (36) (two).
- Cleaning brush (174).
- Cleaning-brush holder (154).
- Cleaning-rod handle and sleeve (152).
- Cleaning-rod stem and sleeve (153).
- Closing spring (53).
- Cocking-handle knob (48).
- Cocking-handle shank (50).
- Cocking-handle rivet (49) (three).
- Connecting piece, female (94).
- Connecting piece, male (95).
- Cooling sponge (178).
- Copper hammer (159).
- Cover plate (57).
- Cover-plate screw (56).
- Cover-plate screw washer (56a).
- Cover screw (111) (two).
- Defective-cartridge extractor (156).
- Dismounting tool (extractor) (63a).
- Dismounting wrench (145).
- Drift (160).
- Drift slide (141).
- Ejector (118).
- Ejector bushing (2).
- Ejector cap (117).
- Ejector key (146).
- Ejector spring (116).
- Elevating-mechanism feet (23) (two).
- Elevating-mechanism foot pins (26) (four).
- Elevating-mechanism guide rod (24).
- Elevating screw (131).
- Elevating-screw pin (130).
- Elevating-screw slide pin (76).
- Elevating-screw head (129).
- Elevating-screw slide (75).
- Elevating-screw tube, with cap (29).
- Elevating-screw tube washer (30).
- End plug (27) (two).
- Extractor (63).
- Extractor spring (73).
- Feed-guide assembling screws (4) (seven).
- Feed piece (71).
- Feed-piece housing cover (54).
- Feed-piece spring (58).
- Feed-piece spring button (55) (two).
- Feed-piece spring pawl (62).
- Feed-piece spring pawl rivet (61) (two).
- Feed-piece spring stud rivet (60) (two).
- Feed-piece spring stud (59).
- Feed strip (175).
- Fermeture nut (72).
- Firing pin (52).
- Fixed-base screw (136).
- Front-feed guide (7).
- Front leg (108) (two).
- Front-leg axis (105) (two).
- Front-leg foot (106) (two).
- Foot rivets (107) (two).
- Front sight (109).
- Front-sight carrier (12).
- Front-sight cover (113).
- Front-sight screw (112).
- Front-stiffening piece (31).
- Gas-cylinder cleaner (177).
- Gas-cylinder support (15).
- Gas-cylinder support pin (16).
- Gas-nozzle ring (18).
- Gas-nozzle ring pin (17).
- Grease brush (173).
- Grease pot (179).
- Guard (44).
- Guard screw (93).
- Half nut (133).
- Half-nut spring (132).
- Handle extractor (157).
- Hand guard (35).
- Hand-guard rivet (37) (34) (39) (twenty-four).
- Hand-guard stud (79).
- Hinge pin (110).
- Inner elevating screw (25).
- Latch plate (84).
- Latch-plate screw (85).
- Latch spring (89).
- Leaf (122).
- Leaf-joint pin (143).
- Leg-catch spring (38) (two).
- Lever (1 right, 1 left) (163).
- Lever axis (162).
- Loading-tool foot (2) short (164).
- Loading-tool foot, long (168).
- Loading-tool handle (161).
- Locking nut (78).
- Locking-nut stop (22).
- Locking screw (70) (two).
- Movable base (142).
- Oil can, including nozzle cap and chain (176).
- Orifice screw (19).
- Outer elevating screw (28).
- Pivot (134).
- Pivot spring (135).
- Pliers (172).

PLATE



Plunger (98).
 Plunger ring (97).
 Plunger spring (96).
 Pushing bar (169).
 Pushing-bar axis (170).
 Pushing-bar guide (171).
 Pushing-bar guide slide (165).
 Radiator (20).
 Radiator pin (21).
 Rammer (155).
 Rear feed guide (3).
 Rear-sight fixed base (144).
 Receiver (1).
 Regulator piston (40).
 Regulator sleeve (41).
 Regulator-sleeve pin (42).
 Resizing-tool frame (147).
 Resizing-tool roller (149).
 Resizing-tool roller support (151).
 Screw (4 long, 8 medium, 4 short) (166).
 Screw driver (158).
 Sear (68).
 Sear spring (67).
 Sear-spring lever (69).
 Sear-spring pin (66).
 Separator (104) (two).

Separator axis (103).
 Separator bolt (101).
 Separator-bolt pin (102).
 Separator nut (100).
 Separator split pin (92).
 Sight-bracket screws (180) (three).
 Sight-carrier pin (13).
 Slide (123).
 Slide cap (121).
 Slide-cap screw, large (138).
 Slide-cap screw, small (137).
 Slide-guide pin (80) (two).
 Slide-guide pin pins (86) (two).
 Slide spring (82).
 Spring screw (90).
 Spring-seat pin (43) (two).
 Stock (46).
 Stock bolt (91).
 Telescopic sight bracket (181).
 Trigger (65).
 Windage screw (126).
 Windage-screw collar (128).
 Windage-screw knob (124).
 Windage-screw pin (125).
 Windage-screw spring (127).

These parts are assembled into the following groups: The barrel group, the receiver group, the firing-mechanism group, the feed-mechanism group, the locking-mechanism group, the guard group, the stock group, the elevating-mechanism group, the hand-guard group, the barrel-rest group, and the rear-sight group.

THE BARREL GROUP.

[Plates V and VII.]

The barrel group contains the barrel, radiator, gas-nozzle ring, front-sight carrier, gas-cylinder support, regulator, and front sight, front-sight cover, front-sight screws, and cover screws.

The barrel is chambered and rifled the same as the barrel for the United States rifle, caliber .30, model of 1903. The rear portion of the barrel is turned down to provide seats for the radiator and the gas-nozzle ring, and the front end for the seat for the front-sight carrier. In rear of the radiator seat are the locking lugs, two interrupted annular rings divided into three sectors, which engage in similar lugs of the locking nut and secure the barrel to the receiver. On the lower exterior surface of the barrel and in the rear of these locking lugs is a small lug which fits in a slot in the receiver. This small lug assures the alignment of the receiver and the barrel, also of the gas-nozzle ring and the actuator. The rear end of the barrel is turned down for the ferreture nut, which fits over the end of the

barrel in assembling. On the upper surface of the rear end of the barrel is a small bevel cut which guides the cartridge into the chamber, and on the left side is the clearance cut for the claw of the extractor and extractor housing on breechblock. A gas orifice or port is drilled through the underside of the barrel at the seat for the gas-nozzle ring.

The radiator is about $7\frac{1}{2}$ inches in length and has cut on its exterior surface a series of deep grooves. The center of the radiator is bored out to a diameter somewhat less than that of its seat on the barrel and is shrunk in place and secured by the radiator pin. The bottom of the radiator is slabbed off for clearance. To its rear end, near the bottom, is assembled the locking-nut stop. The purpose of the radiator is to aid in the rapid radiation of the heat developed during firing.

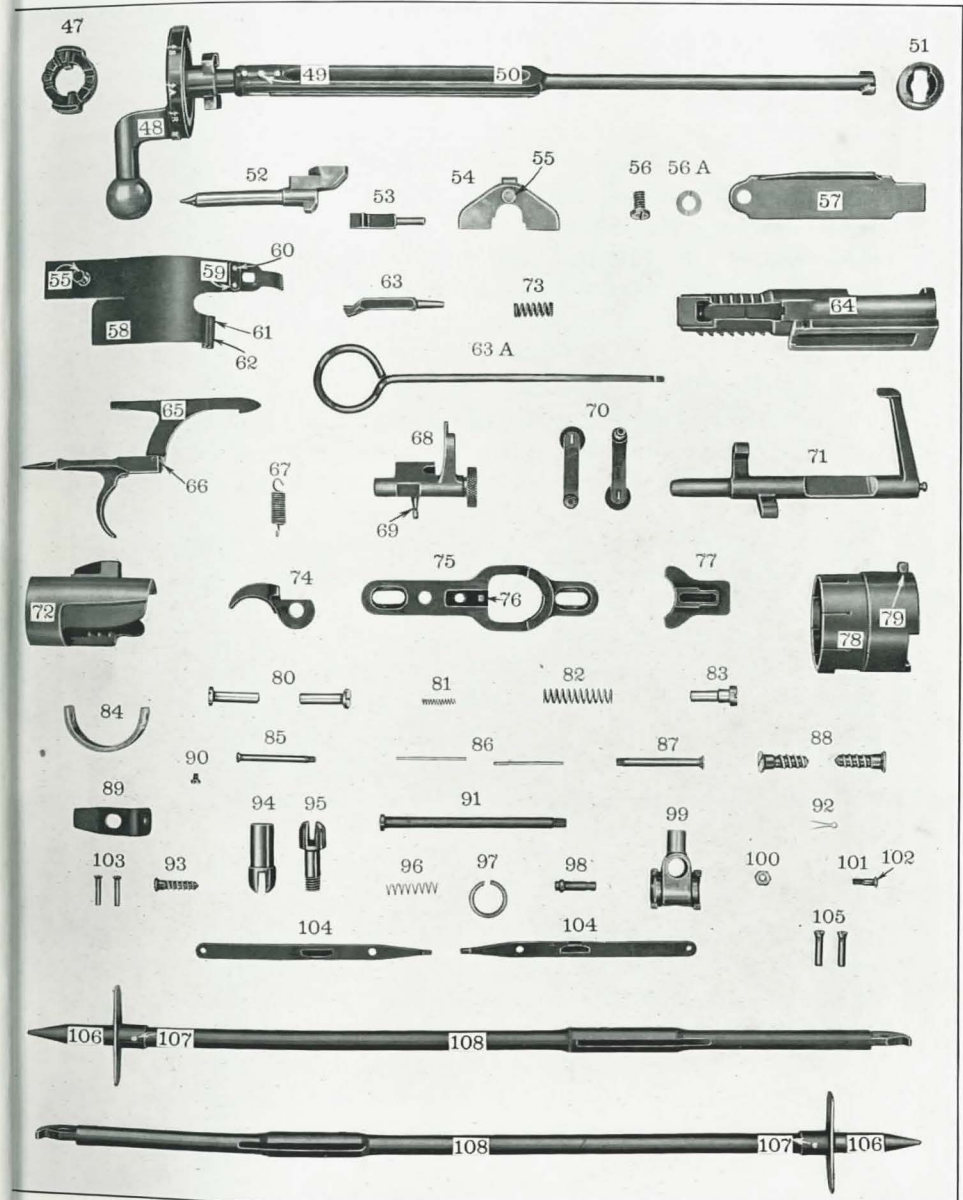
The gas-nozzle ring is assembled to the barrel in front of the radiator and is shrunk in place and secured by the gas-nozzle ring pin. A small hole is drilled from the bottom of the gas-nozzle ring to connect with the gas port in the barrel. The exterior of the hole is closed by the orifice screw. The rear end of the lower portion of the gas-nozzle ring is shaped to form a nozzle and the front end is shaped to form a gas chamber. The nozzle is of circular shape to fit the gas cup of the actuator, and through its center is drilled a small hole into the gas chamber, intersecting the vertical hole drilled from the bottom of the gas-nozzle ring to the gas port in the barrel. The interior of the gas chamber is bored out and tapped near the front end for the regulator piston, and its exterior is graduated to aid in adjusting the regulator sleeve. On the rear upper face of the gas-nozzle ring is a horizontal lug on which the front stiffening piece of the hand guard rests when the latter is assembled.

The front-sight carrier is secured to the front of the barrel by the sight-carrier pin. On the upper part of the front-sight carrier is a dovetailed transverse slot for the front sight. In front of this slot is drilled and tapped a hole for the front-sight screw. On the underside of the front-sight carrier is a pivot which provides the means for the attachment of the barrel rest. On the front of the pivot is a recess into which the plunger of the barrel rest enters and secures the latter in position.

The gas-cylinder support, designed to prevent injury to the gas-nozzle ring during transportation, is assembled to the gas chamber of the gas-nozzle ring, and is secured by the gas-cylinder support pin, the ring on its lower part slipping over the gas chamber and the U-shaped upper part resting against the barrel.

The regulator consists of the regulator sleeve secured to the regulator piston by the regulator sleeve pin. The regulator piston is a cylindrical bar having on its rear end three annular piston rings

PLATE VI



which fit the gas chamber of the gas-nozzle ring. The purpose of these rings is to check the escape of gas to the front and to collect dirt, etc. The center section of the regulator piston is threaded to fit the thread in the gas-nozzle ring; its front end has a square head to aid in adjusting, disassembling, and assembling. The regulator sleeve fits the cylindrical part of the regulator piston in rear of the square head and is pinned thereto. The regulator sleeve covers the piston back to and including the thread on the center section, sufficient space being had between the regulator piston and the regulator sleeve to permit the front portion of the gas-nozzle ring entering with a reasonably close fit. A tongue is milled in the barrel of the regulator sleeve and provided with a small projection on the inside, near the rear, which engages in a longitudinal groove on the underside of the gas-nozzle ring and prevents the sleeve from rotating after adjustment. The front end of the regulator sleeve is knurled, so that it can be more easily turned by the hand.

The purpose of the regulator is to increase or decrease the size of the gas chamber of the gas-nozzle ring, thus controlling the velocity of the rearward movement of the actuator in order to allow for adjustments for various powder pressures, or for a desired increase or decrease in the rapidity of fire.

The front sight has on its upper portion a thin leaf slightly beveled to the front, and on each side is cut a circular groove to better define the sight proper. On the lower portion is a dovetail lug which engages in the dovetail groove of the front-sight carrier. This method of assembling the front sight and front-sight carrier permits of adjustment for deflection, and after the rifle is targeted the hole in the front-sight carrier for the front-sight screw is extended into the front sight and the front-sight screw inserted. Over the front sight is placed the front-sight cover, secured by the cover screws.

THE RECEIVER GROUP.

[Plates V, VI, and VII.]

The receiver group consists of the receiver, ejector bushing, rear feed guide, front feed guide, bottom plate, feed-piece housing cover, and rear-sight fixed base; these parts constitute a receiver when issued, and are permanently attached to the receiver by rivets or screws. In assembling, components are assembled as follows: Closing spring, ejector, ejector spring, ejector cap, cartridge stop, cartridge-stop spring, cartridge-stop holder, cover plate, cover-plate washer, cover-plate screw, feed piece, feed-piece spring, windage screw, rear sight, telescopic sight bracket, ferreture nut, and locking nut.

The receiver is a large steel forging, which contains the firing, feed, and locking mechanisms, and also provides means for the assembling

of the barrel, the guard, the hand guard, and the rear sight. In the front end of the receiver is drilled a large hole which is the seat for the fermeture nut and the barrel. A slot on the lower side of this hole is for the purpose of locating the barrel and for assembling the fermeture nut. In rear of this slot is a recess for the lug of the fermeture nut. The front end of the receiver is threaded on the exterior for the locking nut, which secures the barrel to the receiver.

In rear of the threaded section is drilled a small hole, into which the end of the locking screw enters. On the top and directly in the rear are permanently assembled, by means of the feed-guide assembling screws, the front and rear feed guides, between which slides the feed strip during the firing. The front feed guide contains a narrow slot, in which the feed strip slides, and a large opening on the right for the cartridges. On top and at the right are two undercut slots, slightly beveled, into which is assembled the feed-piece spring. On the left is drilled and tapped a hole for the cover-plate screw. The rear feed guide has a narrow slot for the feed strip and also the cartridge opening on the right. On the left is a dovetail groove for the cover plate and on the right the seat for the feed piece. This seat consists of a hole drilled vertically in the rear feed guide with an opening in its rear for assembling the feed piece. A large lug to the left of this hole, on which the feed piece slides during the firing, and a smaller lug on the right enclose the seat. On top to the right of dovetail groove is an opening under large lug through which the feed-piece spring pawl passes in assembling.

The feed guides are braced on the left by the cover plate, which is secured to the front feed guide by the cover-plate screw and to the rear feed guide by the dovetail slot. The cover-plate screw is held securely by means of a split washer under head of screw, preventing its working loose from vibration in firing. On the front of the rear feed guide, just below and to the right of the dovetail slot, is assembled the cartridge base stop, which limits the movement of the cartridges to the left. In front of the rear feed guide is a tongue which enters between the feed strip and the cartridge and forces the latter downward. To the bottom and the front half of the receiver is securely riveted the bottom plate. The latter has on its lower surface two locking lugs, into which fits the trunnions of the guard. On top of the receiver and directly in rear of the feed guides is an undercut dovetail groove, in which is assembled the rear-sight fixed base, the latter being secured in position by the fixed base screw. The rear-sight fixed base contains the pivot lug for the movable base, the undercut for the windage screw and the lip on the front end of the movable base, and a lug on the rear end, which forms the undercut for the lip on the rear end of the movable base.

Upon its rear upper surface are two zero marks for the wind-gauge graduations. On the left side of the receiver is the ejection opening. Above this opening is drilled and tapped the seat for the cartridge stop. In the rear of the ejection opening is the dovetail seat for the telescopic sight bracket, the latter being secured to the receiver by three sight-bracket screws. On the right side of the receiver is the feed-piece housing cover, which is attached to the bottom plate by the hinge pin. The former is held in its closed position by the closing spring which is inserted in the housing of the bottom plate. In the bottom of the housing of the bottom plate is drilled a small vertical hole in which is inserted the lower end of the feed piece. The ejector bushing is driven into a seat directly below the rear feed guide and has an opening on its left end for the ejector, while on the right are four small lugs, recessed to receive the lugs of the ejector cap.

The interior of the receiver has in its front section the seat for the fermeture nut, which is beveled in the rear to insure that the fermeture nut is always centered.

Within the rear section on the sides are the breechblock guide slots, while on the top and to the left is the guide for the firing pin which, ending in two cams, causes the firing pin to rotate in and out of its recess in the breechblock.

In the rear and bottom part of the receiver are the locking-lug seats for the guard.

On the left of the receiver near the rear end is a small hole, drilled and tapped, into which is screwed the locking screw for securing the guard to the receiver. A small slot in front holds the locking screw in place. Two beveled undercut grooves in the front of the receiver provide seats for the assembling of the hand guard.

THE FIRING-MECHANISM GROUP.

[Plates V and VI.]

The firing-mechanism group consists of the actuator, actuator spring, breechblock, firing pin, extractor, and extractor spring.

The actuator is located below and parallel to the barrel and is the piston which drives the mechanism of the rifle. It has on its upper surface a long straight cut and in the rear two diagonal cam cuts in which moves the lug of the fermeture nut. In the rear of these cams is cut a deep recess in order to reduce the weight of the actuator. In rear of this recess is a large lug; the center section of which is cut away for the lower lug of the firing pin. On the front end of the actuator is the gas cup, which fits over the nozzle end of the gas nozzle ring. On the right side of the actuator are two cam surfaces, upon which move the upper and lower lugs of the feed piece in recoiling and counterrecoiling. Near the front end of the upper cam surface is a dismounting notch for the feed piece. On the left side

of the actuator is the clearance cut for the trigger, and on the bottom is the sear notch in which the sear engages when the rifle is cocked. On the lower surface at the rear end is a slight ramp on which the sear rides near the end of recoil. On the right and left sides, and also on the lower surface of the actuator, are guides or bearing surfaces to control the movement of the actuator during recoil and counterrecoil.

The actuator is hollow nearly its entire length, the rear portion forming a housing for the actuator spring. About midway between the ends of the actuator is secured the actuator bushing. This bushing, which is threaded and screwed in position and secured with a pin, serves as the front seat for the actuator spring and also forms a seat for the lugs on the front end of the cocking handle when the latter is used to retract the actuator.

The actuator spring is a long spiral spring located in the interior of the actuator, with its front end resting against the actuator bushing and its rear end against the actuator spring seat in the guard. As the actuator recoils, this spring is compressed and the energy stored up is used to move the actuator forward at the end of the recoil.

The breechblock contains the firing pin, extractor, and extractor spring. The breechblock rests on the bottom of the guide slots in the receiver, the large lug on the actuator entering a long longitudinal slot in the rear part of the breechblock. At the rear end and left side of this long slot is a deep recess into which the upper lug of the firing pin rotates whenever the breechblock is in motion. In front of this long slot the breechblock is cut away as clearance for the cartridge stop, while at the top and rear end of the slot is a small ramp to aid in disassembling and assembling the firing pin. On the right and left sides of the breechblock at the rear are guides that move in the guide slots of the receiver. On the front section of the breechblock are interrupted threads divided into three sectors, which engage those of the ferreture nut and securely lock the former to the latter during firing. On the right side of the breechblock is a long clearance cut for the ejector. On the left-hand side of breechblock at the front end is the housing for the extractor; under this housing at the end of the breechblock is a stud, which acts as a seat for the curved surface on the bottom of the extractor at the rear of the extractor claw, preventing extractor from pitching too far toward center of breechblock to readily pass over cartridge case. On the inside of the housing a bevel cut is the working point for the bevel cut on top of the extractor when firing the rifle. The rear end of the housing forms a seat for the shoulder on the extractor after the extractor is worn on the bevel surface and on the bottom, thus increasing the life of the extractor. At the rear of the housing is a slot for the extractor and extractor spring; at the rear end of this slot is the extractor spring seat. On the left side back of the extractor spring seat the breech-

block is cut away to facilitate the assembling and dismounting of the extractor and extractor spring.

At the front end of the breechblock on the upper rim a shallow seat is cut for carrying the cartridge into the chamber. The ends of rim on each side of ejector groove are slightly closed toward center of the breechblock to insure a good grip of cartridge case. The front end of the breechblock is counterbored for the head of the cartridge, and in the center of this head space is drilled a small hole for the firing-pin point. The interior of the breechblock is bored out for the barrel of the firing pin.

The firing pin is seated within the breechblock. The front portion is cylindrical, terminating at the front end of the firing-pin point, and has on its rear end a small and a large lug. The small lug is on the underside and rests, when assembled, in the recess of the large lug on the upper part of the actuator. This small lug causes the firing pin to move to the rear in the first motion of recoil. The large lug is on the upper side and has on its top two cam cuts, which move in the cam cuts in the receiver and serve to rotate the firing pin in and out of the recess in the breechblock. The front shoulder of this upper lug rests against the front of this recess during counterrecoil and carries the breechblock forward, the upper lug on the actuator bearing against the rear end of the barrel of the firing pin. The bottom and rear end of the upper lug is beveled to permit assembling and disassembling.

The extractor is an irregular bar having on the underside of its forward end a claw and on the upper side of the forward end an incline which seats against the underside of extractor housing of the breechblock, when passing over rim of cartridge case. At the rear end of the extractor is a pivot on which the extractor spring seats and forces the extractor downward over the cartridge head. When the breechblock strikes the cartridge in loading, the extractor is forced backward until the claw drops into the cannellure of the cartridge.

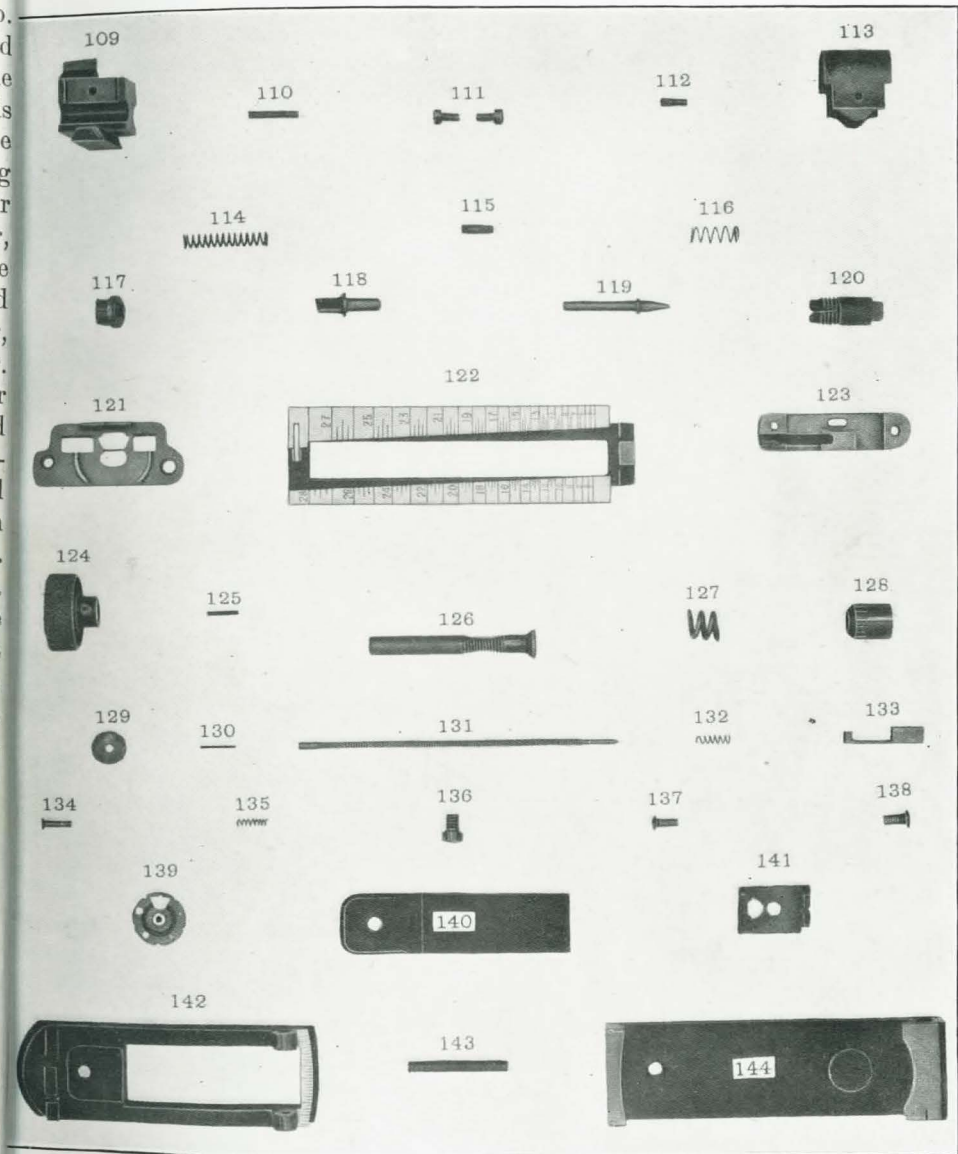
The extractor is assembled to the breechblock by slipping the extractor spring over the pivot on the rear of the extractor, inserting the front end of the extractor in the opening in rear of the extractor housing and gradually forcing the extractor and spring into place with the dismounting tool. The position of the extractor is determined by the small bevel cut on top of the extractor, the convex cut on underside of extractor housing, and shoulder on the extractor. When in action the pivot on the extractor is bent slightly, so the pressure of the extractor spring forces it into proper location. The extractor and spring may be dismounted either by use of the dismounting tool or by engaging a small screw driver behind the extractor spring in the small slot provided in the extractor seat of the breechblock.

The feed-mechanism group consists of the feed piece, the feed-piece spring, the cartridge stop, the cartridge-stop spring, the cartridge-stop holder, the ejector, the ejector spring, and the ejector cap.

The feed piece is of irregular shape, having at its upper end a feed arm, on the end of which is a pointed lug which engages in the central opening of the feed strip. On the top of the feed piece is a small lug, which holds the feed-piece spring in position. On the feed arm, near this lug, is a small cut into which the feed-piece spring stud drops when the feed arm is moved to the left. Near the lower end on the shaft of the feed piece are two lugs, one above the other, that move on the cam surfaces of the actuator and give rotation to the feed piece. When the last cartridge in a feed strip has been fired the feed piece drops down, due to pressure of the feed-piece spring, and the lower lug then prevents forward movement of the actuator. The lower end of the feed piece is cross milled to prevent the finger slipping when the feed piece is raised. Between the lugs and the feed arm a portion of the shaft is made flat, in order to facilitate assembling. The feed piece when assembled in the rifle is held in a vertical position by the opening in the bottom of the housing on the bottom plate and the circular opening in the rear feed guide on the receiver.

The feed-piece spring is an irregularly curved spring of sheet steel. On its front end is riveted the feed-piece spring button, for use in the disassembling and assembling of the spring, and at the rear and left side is riveted the feed-piece spring pawl. The latter is pointed on its left side; and as the feed strip moves to the left, the feed-piece spring pawl engages in the rear openings of the strip, thus preventing the feed strip from moving to the right. At the same time the pawl forces the cartridge slightly downward out of the feed strip. On the right side, near the rear, is riveted the feed-piece spring stud, while directly in rear of this stud is a small opening through which passes the small lug of the feed piece. As the feed piece rotates, the upper surface of the feed arm strikes against this spring stud and slightly raises the feed-piece spring, thus allowing the pawl to ride over the feed strip. The feed-piece spring is assembled to the receiver by forcing it into the under-cut grooves on the right side of the front feed guide.

The cartridge stop is a short cylindrical piece with a blunt conical point, and is seated in the receiver just above the ejection opening. It is held in position by the cartridge-stop spring and the cartridge-stop holder, the latter containing a small opening through which the end of the cartridge stop projects. The holder is also threaded for the purpose of assembling it to the receiver. The principal function



of the cartridge stop is to limit the movement of the cartridges to the left and to properly align them. It also indicates, in loading, whether or not the feed strip has been fully inserted.

The ejector is assembled in the ejector bushing of the receiver and is held in position by the ejector spring and the ejector cap. The ejector cap is circular in shape, having on its circumference four small lugs which engage in corresponding slots in the ejector bushing. Special attention should be paid to the assembling of the ejector cap, being sure the small lugs on the sides of the cap are properly located in the slots provided for them in the ejector bushing; failure to properly locate these lugs will result in the ejector cap being forced outward against the feed piece and prevent the forward movement of the firing mechanism. On the top of the ejector cap are cut two slots at right angles to each other, into which fit the ejector key used in dismounting and assembling. In the center of the cap is a small hole which allows the end of the ejector to protrude.

THE LOCKING-MECHANISM GROUP.

[Plate VI.]

The locking-mechanism group is made up of the locking nut, the fermeture nut, and the locking screws. The locking of the mechanism by the locking nut is more permanent in its nature, while that of the fermeture nut is a continuous locking and unlocking for each round fired.

The locking nut is cylindrical in shape, having two interrupted annular rings of three sectors each on the inside to provide means for locking the barrel to the receiver. In rear of these locking rings is cut the thread for assembling the locking nut to the receiver. Two small recess cuts are made on the front end of the locking nut for dismounting wrench, and also a large cut for clearance and stops for the locking-nut stop on the radiator.

After the barrel is locked in position the locking nut is secured by one of the locking screws, which is inserted in the small hole drilled and tapped on the left side near the rear end of the locking nut, the end of the locking screw entering a small hole on the left side of the receiver directly in the rear of the threads. The other locking screw is used for locking the guard to the receiver. In front of the locking-screw seat in the locking nut is a small lug with a shallow slot which secures the locking screw in position. On the right side of the locking nut is the hand-guard stud, which holds the hand guard in place while the barrel is being removed. The rear of the locking nut has seven slots, which insure a tight fit on the receiver.

The fermeture nut is cylindrical in shape and has on its underside a large lug which moves in the cam cuts on the upper surface of the actuator. The front end of the fermeture nut is counterbored

to receive the barrel, while directly in rear are interrupted threads divided into three sectors for locking the breechblock. The left sector of the fermature nut is enlarged to allow passage of the extractor housing of the breechblock. An enlarged recess is provided as clearance for the extractor housing as the fermature nut rotates. Between the lower and right-hand sectors is a deep cut which provides a cavity into which primers may drop should they become dislodged from the cartridge case during firing. On top of the fermature nut is a long longitudinal cut from the rear, providing clearance for the cartridge in loading; near the left rear end is a semicircular cut, providing clearance for the front clip of the feed strip; and on the top and right is the clearance for the feed strip. The rear shoulder of the fermature nut is beveled to enter the corresponding bevel in the receiver. The function of the fermature nut is to lock the breechblock at the instant of firing and to unlock it immediately after firing. The fermature nut is located in the forward part of the receiver, directly in rear of the barrel, and is held by a shoulder on the barrel and a similar shoulder in the receiver, so as to prevent any longitudinal movement but to permit of rotation about its axis.

THE GUARD GROUP.

[Plates V and VI.]

The guard group consists of the guard, actuator-spring seat, latch spring, cocking handle, sear, sear spring, and trigger.

The guard, when assembled, closes the rear end of the receiver and supports the stock. It is secured to the receiver by trunnions on its front end which enter the locking lugs on the bottom plate, and also by locking lugs on each side in the upper part of the guard near the rear, which enter seats on the interior of the receiver. It is secured in its seat by one of the locking screws, which enters the guard through the locking-screw hole of the receiver. Within the guard is the recess and seat for the sear, and in rear of this a long slot for the trigger. Under the latter slot is the trigger bow. In the upper part of the guard is a longitudinal hole in the top and bottom of which are two slots, in which the actuator-spring seat is placed. The latter is held in position by two large lugs on its perimeter and by two spring-seat pins which are assembled to the guard directly in front of the actuator-spring seat. Through the center of the actuator-spring seat is drilled and slotted a small hole with two small lugs 180° apart. Through this hole passes the shank of the cocking handle, the lugs sliding in the longitudinal grooves of the latter. Three semicircular grooves cross the rear surface of the actuator-spring seat, by means of which the cocking handle is locked into its three positions. In rear of the actuator-spring seat is the locking-lug seat of the cocking handle. Under the opening for the actuator-

spring seat is a rectangular opening for the tongue of the trigger. An arrow is stamped over the cocking-handle opening to aid in setting the latter in the desired position. On the rear of the guard is a short tang and a long tang, by means of which it is assembled to the stock. The latch spring is a flat steel spring assembled near the bottom of the long tang by the spring screw.

The cocking handle, consisting of the shank and knob riveted together, is located within the actuator and extends to the rear through the actuator-spring seat opening of the guard.

The front end of the cocking-handle shank extends into the actuator and terminates in a double-locking lug. In retracing the actuator by hand this lug bears against the actuator bushing. The rear portion of shank is provided with grooves which engage the two lugs on the interior of actuator-spring seat.

The cocking-handle knob has two locking lugs which serve to lock the guard to the receiver. These locking lugs are made with two projections which engage in the notches of the actuator-spring seat and thereby determine the position of "safety" or the kind of fire desired. On the rear of the cocking-handle knob is a circular disk, on the face and near the perimeter of which are stamped arrows which show the various firing positions. The position for firing automatically is marked "A," that for firing semiautomatically is marked "R," and that for safety is marked "S." An arm extends out from this disk with a ball handle by means of which the cocking handle is rotated into these positions and also assists in dismounting and assembling. The disk of the cocking-handle knob is retained in position by means of two conical surfaces on its front face which engage in corresponding surfaces on the rear end of receiver. The disk of the cocking-handle knob has two notches cut therein. With the knob set at A, the position of the lower notch permits the tongue of the trigger to pass through, thereby allowing the trigger to be pulled directly to the rear. The hook on the forward end of the trigger engages the cocking arm of the sear, holding the cocking toe on the sear below the sear notch on the actuator. This position of knob will therefore give continuous or automatic fire.

With the knob set at R, the position of upper notch, which is provided with a cam surface, forces the tongue of the trigger downward as the trigger is pulled to the rear, thereby causing the trigger to release the sear for each shot. This position of knob will therefore give single shots. With the knob set at S, neither of the notches is opposite the tongue of trigger, and the latter can not, therefore, be pulled, and this position of knob is therefore known as the "safety position." With the knob set at C and D, the cocking handle can be drawn to the rear. This position of knob is used when it is desired to cock or draw back the actuator by hand and is also used when the

mechanism is to be dismantled. To set for the different positions the cocking handle is rotated until the particular letter corresponding to the position desired comes opposite an arrow marked on the guard.

The sear is made with a knurled button head and a spindle on which is the cocking toe, which engages in the sear notch of the actuator. The cocking toe has on its under side a deep recess; the spindle is made hollow and the head countersunk in order to reduce its weight. Underneath the cocking toe, assembled and riveted to the spindle, is the sear spring lever, by means of which the sear spring is attached to the sear. Between the cocking toe and the knurled button head is the cocking arm, which stands in an upright position when the sear is assembled in the guard. On its top is a small cut in which the hook of the trigger arm engages. On the spindle are two flat cuts by which the sears is dismantled and assembled.

The trigger is of irregular shape, having a trigger arm with a hook on its forward end which engages in the cut on the cocking arm of the sear. This arm extends to the rear sufficiently far to limit the motion to the rear of the trigger, and is connected to the body of the trigger by a curved arm which offsets the trigger arm to the left, so that it will clear the actuator. The body of the trigger has a circular bevel cut in the front end where the sear-spring pin is assembled. From the bottom of the body extends the finger piece which passes through the slot in the guard. On the rear of this body is a tongue having on its upper surface a small ramp. This ramp, when the trigger is pulled to the rear, slides into slots cut in the disk on the cocking handle, which permits the trigger to move straight to the rear or causes it to tilt slightly downward or prevent it moving at all. These are the positions of automatic *A*, semiautomatic *R*, and safety *S*, respectively.

THE STOCK GROUP.

[Plates V and VI.]

The stock group consists of the stock, latch plate, elevating-screw tube, and butt plate.

The stock is made of well-seasoned black walnut, cut down in front so as not to interfere with the sighting. It has a pistol grip and is recessed in front for the tangs of the guard, a small hole being drilled at an angle about midway in the recess for the lower tang of the guard for the guard screw, and a larger hole being drilled perpendicularly through the stock near the rear end of the recess for the upper tang for the stock bolt. In the bottom and rear of this grip is a small recess for the end plug, a shallow groove for the latch spring, and the seat for the latch plate, the latter being secured by the latch-plate screw, a transverse hole being drilled for that purpose. In the rear end of the stock is assembled the elevating-screw tube with cap,

in a hole drilled for this purpose, and the lower end then spun out over the washer. In the bottom and rear of the stock are drilled two holes for the slide-guide pins and two smaller transverse holes, through the above holes, for the slide-guide-pin pins. Between the large holes and in front of the elevating-screw-tube opening is cut a small recess for the slide spring. On the front end of the stock is a small tenon which extends into the guard, taking the shock of recoil in firing.

The butt plate has two side tangs and is secured to the butt of the stock by two butt-plate wood screws and one butt-plate screw which passes through the tangs, holes being drilled in the rear end of the stock for the wood screws and a smaller hole drilled through the stock near its rear end for the butt-plate screw. On the upper end of the butt plate is a long tang for supporting the weight of the rifle on the shoulder when firing without the elevating mechanism.

THE ELEVATING-MECHANISM GROUP.

[Plates V and VI.]

The elevating-mechanism group consists of the inner elevating screw, the outer elevating screw, and the elevating-screw slide.

The inner elevating screw consists of the elevating-mechanism guide rod, the end plugs, the elevating-mechanism feet, and the inner elevating screw. The elevating-mechanism feet are flat pieces, oblong in shape, having on the top a large lug to which the elevating-mechanism guide rod is assembled. On the underside is a large recess, in the center of which is a small conical lug to prevent slipping. The end plugs are notched on the top so as to engage in the latch plate on the stock and thereby secure the elevating mechanism when in the traveling position. On the elevating-mechanism guide rod is assembled the inner elevating screw, and to its ends are riveted, by means of the elevating-mechanism foot pins, the end plugs and the elevating-mechanism feet. The body of the inner elevating screw is hollow, in order to reduce its weight, and has cut on its exterior a right-hand thread. At the lower end is a square head, through which a small hole has been drilled for the elevating-mechanism guide rod.

The outer elevating screw has on the exterior of its body a left-hand thread extending nearly to the bottom. On the lower end are four radial arms by means of which the outer elevating screw is rotated. On the interior of the body, near the bottom, is cut a right-hand thread to fit the corresponding thread on the inner elevating screw. Below and above this thread the interior is counterbored for clearance.

The elevating-screw slide is designed to lock the elevating mechanism when firing, and consists of the elevating-screw slide, the binder, the binder lever, the binder-lever pivot, and binder spring. To the

elevating screw slide are assembled the parts just mentioned. Slightly in the rear of its center is the elevating screw opening, the rear end of which forms a half nut, which engages in the thread of the outer elevating screw. In front of this opening is a dovetail groove for the binder. In the rear end of this groove is assembled the elevating screw slide pin against which rests the binder spring, while in the front part is drilled a small hole for assembling the spring. In front of the binder slot is also drilled a hole into which is driven the binder lever pivot. Near each end of the elevating screw slide are the slots for the two slide guide pins, which secure the elevating screw slide to the stock. After the slide guide pins have been assembled the slide guide-pin pins are driven transversely through the stock and through a small hole in the slide guide pins, thereby securing the latter in position. In the recess of the stock under the elevating screw slide is assembled the slide spring.

The binder has on its upper side a dovetail lug containing a recess for the binder spring and the rear end is made to fit the body of the outer elevating screw. The binder is assembled to the elevating screw slide by means of the dovetail lug engaging in the corresponding groove on the slide.

The binder lever has on its left side a circular cam surface which moves against the front end of the binder. In the center of the circular cam surface is drilled a hole for the binder lever pivot, and to the right extends the lever arm, which is curved to the front so as to fit the finger. The rear of this arm is cross milled to aid in operating the clamping device. A small lug on the upper surface of the binder lever limits the motion of the lever arm to the rear.

The binder lever pivot is the axis for the binder lever, and has its upper end turned down so as to have a driving fit in the pivot hole of the elevating screw slide, while its lower end forms an eccentric about which the binder lever rotates; the purpose of the eccentric being to take up the wear between the binder and the binder lever. On the bottom or head of the pivot is stamped an arrow which indicates the high point of the cam.

The outer elevating screw can be quickly inserted into or removed from the stock by drawing the elevating screw slide to the rear by the binder lever. In the traveling position the elevating mechanism is secured in front by the end plug engaging the latch plate on the stock and in the rear by the clamping device.

THE HAND-GUARD GROUP.

[Plate V.]

The hand-guard group consists of the hand-guard body, front and body stiffening pieces, assembling plates, leg catches, and leg catch springs.

The hand-guard body is made from a drawn-steel tube or from sheet steel pressed to shape and brazed. It is reinforced at the front end by the front and the body stiffening pieces which are securely riveted and brazed to the hand-guard body. In the forward part of the hand-guard body are punched a number of small holes which permit the powder gases to escape after impinging on the actuator. On the rear end of the hand guard are riveted the two assembling plates which seat in the undercut grooves in the front of the receiver. On each side of the hand guard are riveted the leg catches, under which the leg-catch springs are assembled. These catches support the front legs of the barrel rest when in the traveling position. When assembled the hand guard is held in position by the undercut grooves in the front of the receiver and the horizontal lug on the upper part of the gas nozzle ring. The purpose of the hand guard is to protect the gunner from escaping gases and also to provide protection from the moving actuator, thus insuring that all moving parts of the rifle are inclosed.

THE BARREL-REST GROUP.

[Plates V and VI.]

The barrel-rest group is made up of the following principal parts: The barrel-rest head, the plunger, the connecting piece male, the connecting piece female, the front legs, the front-leg feet, and the separators.

The barrel-rest head is a steel piece which serves as a sleeve to the connecting pieces, male and female, and into which the plunger, plunger ring, and plunger spring are assembled. In the body of this head are two holes, one being a small, vertical hole for the pivot on the front sight carrier and the other a larger transverse hole for the male and female connecting pieces. On the top at each side the body of the head is cut away for the lug on the top of the front leg. In front of the pivot hole is drilled a longitudinal hole in which is assembled the plunger and plunger spring. The plunger secures the barrel seat to the pivot at the bottom of the front sight carrier. The plunger is held in place by the plunger ring, the latter being assembled through a hole in the front part of the plunger.

The connecting piece, female, is drilled and tapped on one end to match the thread which is cut on the body of the connecting piece, male. The outer ends of both connecting pieces are slotted for the front legs. The connecting pieces are assembled in the barrel-rest head, the front legs are then inserted into the slots and riveted in position by the front-leg axis.

The front leg is a long bar having at the top a flat lug. A notch is cut across this lug which bears against the connecting piece, and the barrel-rest head when the front legs are extended, and a hole is

drilled through this lug for the front-leg axis. Above the center of the front leg is a section, larger in diameter than the remainder of the bar, in which is cut a deep slot for the separators, and at right angles to this slot is drilled the separator axis hole. At the lower end of the front leg is riveted, by the foot rivet, the front-leg foot, the latter being made with a flat plate, which prevents the front leg from sinking in soft ground.

The separators which hold the front legs in the extended position are riveted to the front legs by the separator axes. The separators are secured to each other by the separator bolt. The separator bolt is secured by the separator nut and the latter by the separator split pin. A small lug on the end of each separator enters a slot in the other separator and holds the legs extended.

THE REAR-SIGHT GROUP.

[Plate VII.]

The rear-sight group is made up of the following principal parts: The movable base, the base spring, the leaf, the elevating screw, the slide, the half nut, the slide cap, the drift slide, the aperture disk, and the windage screw.

The movable base has on its upper surface two ears in which are the holes for the joint pin which serves as a hinge for the leaf. On the rear end of the movable base are the wind-gauge graduations, each point of which corresponds to a lateral deviation of 4 inches for each 100 yards. Both ends have lips which fit the undercuts of the fixed base, the front lip having also a worm gear for engaging the thread of the windage screw. The base spring fits in the spring seat of the movable base.

The leaf is graduated from 0 to 2,800 yards. On the right side of the sighting opening in the leaf is the groove and seat for the elevating screw, which is a long, thin screw, extending from the bottom of the sighting opening to the top of the leaf, where it is secured in the elevating screw head by the elevating screw pin. This elevating screw allows minute corrections for elevation and also holds the slide in position on the leaf by means of a half nut which is seated in the slide and the half-nut spring, the latter forcing the half nut against the thread on the elevating screw. The outer end of this half nut is knurled, and by pressing in on the knurled head the half nut can be released from the elevating screw and the slide quickly raised or lowered.

The rear face of the slide is cut out for the leaf, and the drift slide and the right half is made with a seat for the half-nut spring and the half nut. The right and left ends are drilled and tapped for the small slide-cap screw and the large slide-cap screw, which secure the slide cap to the slide. The front face of the slide is slotted and recessed for the pivot.

The slide cap has a circular cut in its upper surface which forms a recess for rotating the aperture disk, and also apertures for sighting and for reading the graduation on the leaf. The center is slotted for the pivot. On the right and left sides are drilled the holes for the small and large slide-cap screws. On the rear face at the bottom of the slide cap is the open or battle sight.

The drift slide moves in the drift slots in the leaf. At the top is a small open sight, while just below are two openings, the upper for the pivot and circular lug on the aperture disk and the lower for a sighting aperture. The drift slide is held in place by a lug on its front face, which bears against the slide and by the lug which contains the open sight. This latter lug extends to the rear and bears against the top of the slide cap. On the lower edge of the open-sight lug is another small lug, which engages in the notches on the perimeter of the aperture disk, locking the latter in the desired position.

The aperture disk is a circular piece containing five sight openings, viz: Four peepholes, 0.04, 0.06, 0.08, and 0.10 inch in diameter, and one large aperture which contains an open sight. A circular lug on the front face engages in the central opening of the drift slide, thus causing the aperture disk to conform to the movement of the former. This lug is drilled and tapped for the pivot spring and the pivot. The purpose of the pivot spring is to force the aperture disk to the rear, so that one of the notches, which are cut on its perimeter, will engage in the small lug on the drift slide and prevent rotation. By pressing inward, the aperture disk can be released and rotated until the desired aperture is opposite the sighting opening in the drift-slide.

The windage screw consists of the windage screw, the windage screw knob, the windage screw collar, the windage screw spring, and the windage screw pin. It is seated in the front part of the fixed base.

DISMOUNTING AND ASSEMBLING THE RIFLE.

The rifle should not be assembled or disassembled except under the direct supervision of an officer or a competent noncommissioned officer.

Metal parts should not be struck directly with a hammer. If necessary to strike any part of the rifle, interpose a buffer of wood or copper between the parts struck and the hammer.

The firing mechanism of the rifle can be disassembled with the rifle resting on the barrel rest and the elevating mechanism feet, but for convenience it should be placed on box or bench. For the ordinary dismounting that may be necessary to replace spare parts no tools are required except a dismounting wrench when it is necessary to replace a ferreture nut. To replace the barrel, ejector, and cartridge

stop, special tools are, however, necessary, and these are furnished with the accessories. The rifle is disassembled as follows:

(1) *Let down the firing mechanism*, if the rifle is cocked. Place the thumb of the right hand on the top of the feed-piece housing cover and with the forefinger on the bottom of the feed piece raise the latter to its highest position. Set the cocking handle at any of the positions for firing, and pull the trigger.

(2) *Remove the cocking handle*.—This is accomplished by rotating the cocking handle until the cocking-handle knob is just beyond the vertical position, as indicated by the arrow. Draw the cocking handle directly to the rear for about one-half inch and then rotate it about 45° to the right, until the lugs of the actuator spring seat come up against the side of the dismounting slot in the cocking-handle shank. The cocking handle is now free to be withdrawn from the guard.

(3) *Remove the guard*.—Unlock the guard by unscrewing the locking screw on the left side of the receiver. Grasp the bottom of the receiver in the left hand and the small of the stock with the right, then push the stock forward about three-eighths inch and then straight downward, and remove from the receiver.

(4) *Remove the actuator spring*.

(5) *Withdraw the actuator from the receiver*.—Insert the cocking handle into the actuator until the lug on the front end of the cocking handle is engaged in the actuator bushing. Draw the actuator to the rear.

(6) *Remove the breechblock, firing pin, and extractor*.—Lift the breechblock from its seat on the actuator. Draw the firing pin to the rear and by tapping the breechblock on its base the firing pin can be removed from the breechblock. The extractor and spring are removed by inserting the dismounting tool (claw to the front) in rear of the extractor spring, and then rotating the dismounting tool through an angle of 180°, at the same time pressing downward and backward until the spring flies out of its seat. The extractor is then pulled out to the rear. This is most conveniently done by holding the breechblock in the left hand, head of block pointing to the front, and manipulating dismounting tool with the right hand. Care should be taken to avoid slipping of the dismounting tool, as by its careless use a severe cut may be inflicted on the hand. In assembling the extractor and spring it is best to so place the spring that one end of the rear coil comes at the bottom part of the extractor spring seat, in the breechblock. This allows a slight opening between the upper part of the extractor spring and extractor spring seat, so that the point of the dismounting tool can be more readily inserted behind the spring.

(7) *Remove the feed-piece spring*.—With the left hand raise the rear of the feed-piece spring until it is free of the small lug on the top of the feed piece. With the right hand grasp the feed-piece spring button and draw the spring directly to the rear. In case the

spring can not be easily removed it can be best accomplished by gently tapping the feed-piece spring button with the handle of a screw driver.

Care must be taken to see that the feed-piece spring pawl on the left of the feed-piece spring is clear of the rear feed guide before attempting to remove the spring.

(8) *Remove the feed piece*.—Open the feed-piece housing cover, and raise the sight. Then grasp the feed arm of the feed piece, raise, and rotate the latter through 180°. Remove the feed piece by withdrawing the flattened part of the shaft through the opening in the rear feed guide.

(9) *Remove the ejector*.—Release the ejector cap by pressing downward with the ejector key and then rotate the cap through one-eighth of a turn. Remove the cap and the ejector spring and then withdraw the ejector.

(10) *Remove the barrel*.—This is accomplished by first unscrewing the locking screw, three turns, which will remove the pilot on end of locking screw from the recess in the front end of the receiver and allow the screw to remain in the locking nut, thereby avoiding a possible loss of time in locating the locking screw when ready to reassemble. By means of the dismounting wrench then rotate the locking nut to the right until the hand-guard stud on the latter strikes against the hand guard. Grasp the barrel with the right hand and the receiver with the left, and draw the barrel straight to the front.

Do not attempt to operate the breech mechanism when the barrel is disengaged, since the fermature nut is not held under this condition and the threads of the breechblock may jam.

(11) *Remove the hand guard*.—Rotate the locking nut to the left by means of the dismounting wrench, until the hand-guard stud is free of the hand guard. Remove the hand guard from its seat in the receiver.

(12) *Unscrew and remove the locking nut* from the receiver.

(13) *Remove the fermature nut*.

(14) *Remove the cartridge stop*.—Unscrew the cartridge-stop holder by means of the dismounting wrench. Then withdraw the cartridge-stop spring and the cartridge stop.

(15) *Remove the cover plate* by unscrewing the cover-plate screw, using the screw-driver end of the dismounting wrench. Remove the cover-plate screw washer and drive the cover plate directly to the front.

(16) *Remove the sear, sear spring, and trigger from the guard*.—To remove the sear, disengage the cocking arm of the trigger from the sear, grasp the knurled head of the latter with the left hand, the right holding the guard. Then rotate and draw it outward until the flattened portion of the sear is opposite the cut in the guard, when the sear may be lifted from its seat. The trigger is then removed by

drawing the latter upward and then forward. Separate the sear and trigger by detaching the sear spring from each.

In removing the trigger, care should be exercised that the arms of the trigger do not become jammed or bent during dismounting, as this part is comparatively fragile and can be easily deformed by excessive force, thus causing improper engagement of the trigger arms with the cocking handle and sear.

(17) *Remove the inner and outer elevating screws.*—Release the end plug from the latch plate by grasping the front end of the guide rod firmly, press downward, at the same time drawing directly to the rear. Unlock the outer elevating screw by rotating the binder lever from front to rear. Draw the slide by means of the binder lever directly to the rear. The outer elevating screw with the inner elevating screw are then free to be removed from the stock.

(18) *Remove the stock.*—This is accomplished by removing the stock bolt and the guard screw.

(19) *Remove the elevating-screw slide.*—Drive out the slide-guide pins and then remove the slide-guide pins, by prying upward under head of slide-guide pin with end of a small screw driver, placing some thin material between the screw driver and elevating screw slide to avoid mutilation of the grooves for the slide-guide pin. The slide-guide pins are slotted for the purpose of placing the pinhole of the latter in prolongation of the pinhole in the stock.

(20) *Remove the slide spring.*

(21) *Remove binder lever and binder.*—The binder is removed by driving out the binder lever pivot. Then remove the binder spring by compressing the spring sufficiently to allow the pointed end of a small wire to be inserted between the upper last coil of the spring and edge of small hole in the slide. Pressing the wire at an angle from the end of the spring will cause it to fly out of the slide and onto the wire, through the small opening in the bottom of the elevating screw slide. The binder is then easily removed.

The barrel rest, the regulator, the butt plate, the latch plate, the latch spring, the front sight, the rear sight, and the rear-sight fixed base can be removed without further instructions.

The remaining parts are riveted and pinned and should not be disassembled except at an armory or by a skilled workman with proper tools.

ASSEMBLING THE RIFLE.

(1) Assemble the binder, the binder spring, the binder lever, and the binder-lever pivot to the elevating screw slide.

(2) Assemble the butt plate, the latch plate, the elevating screw slide, and the guard to the stock.

(3) Assemble trigger, sear spring, and sear to the guard.

(4) Assemble the closing spring, cover plate, cover-plate screw washer, and cover-plate screw, fermeture nut, locking nut, the hand

guard, barrel, ejector, ejector spring, ejector cap, feed piece, feed-piece spring, cartridge stop, cartridge-stop spring, cartridge-stop holder, rear-sight fixed base, fixed-base screw, and rear sight to the receiver, in the order mentioned.

On the inside of the ejector bushing between the grooves for assembling the ejector cap are four U-shaped recesses to receive the small lugs on the sides of the ejector cap. Care must be taken in assembling to make sure that these small lugs are properly located in the recesses provided for them, which can be determined by trying the ejector cap with the ejector key. If the cap does not turn without downward pressure the lugs are properly engaged. If the cap is not properly located the action of the breechblock on the ejector when firing the rifle causes the spring to force the ejector cap outward against the feed piece at an angle which causes the ejector cap to act as a wedge between the end of the ejector and the feed piece and will prevent the forward movement of the firing mechanism.

Care must be taken in assembling the fermeture nut that the proper end is inserted and that the lug is turned to the left into the recess in the receiver. Equal care should be given to assembling the ejector cap.

The receiver should be assembled to the barrel before assembling the firing mechanism to the guard. If the receiver is not assembled to the barrel the fermeture nut is not held in place, and by letting the firing mechanism down with the fermeture nut displaced a jam of the teeth of either the fermeture nut or breechblock may be caused.

(5) Assemble the extractor, extractor spring and firing pin to the breechblock and place the latter on the actuator and insert in the receiver. In placing the breechblock on the actuator see that the upper lug of the firing pin is in the recess on the left of the breechblock. In inserting the actuator care must be taken that the actuator is forced fully home, otherwise trouble will occur in the assembling of the guard, due to the buckling of the actuator spring. While inserting the actuator in the receiver, raise the feed piece to its highest position with the right hand.

(6) *Insert the actuator spring.*—If the actuator is fully seated the spring will not protrude beyond the receiver more than half an inch. Should the spring extend farther, it should be taken out and the actuator seated properly by the aid of the cocking handle. A weak actuator spring can usually be detected by its failure to protrude slightly beyond the rear end of the receiver when assembling.

(7) *Assemble the guard.*—Grasp the small of the stock with the right hand and the receiver with the left. Carry the guard forward until the actuator spring rests upon the actuator-spring seat. Then, holding the guard as close to the receiver as possible, force the former forward until the trunnions slip into the locking lugs on the bottom

plate of the receiver. At this instant, raise the guard and draw the latter back into its seat. Care must be taken not to buckle the actuator spring, since this will interfere with the assembling of the cocking handle. In the case of a stiff spring, the cocking handle may be partially inserted into the guard before assembling the latter.

(8) Insert the cocking handle in a manner the reverse of disassembling, thus locking the guard and receiving together while putting in the locking screw. If the locking screw is inserted before the cocking handle, the guard is liable to slip forward slightly, allowing the sharp end of the locking screw to shave and elongate the hole in the guard, resulting in a looseness between the guard and receiver while cocking the rifle by hand.

(9) Assemble the barrel rest and the elevating mechanism.

REPLACING EXTRACTOR OR EXTRACTOR SPRING.

The replacing of the extractor or extractor spring when the rifle is dismounted is explained on another page. If the rifle is mounted and it is desired to replace only the extractor or extractor spring, it can be done as follows:

- (1) Let down mechanism if the rifle is cocked.
- (2) Pull back the breechblock by means of the cocking handle until the extractor is in the middle of the ejection opening of the receiver. (Cocking handle can be retained in this position by placing a live or fired cartridge between the end of cocking handle and guard so that it is not necessary to hold it back with the hand.)
- (3) Insert the dismounting tool in rear of spring and remove the extractor and extractor spring.
- (4) Replace with new extractor, extractor spring or both, and let the firing mechanism go forward.

REPLACING FIRING PIN OR BREECHBLOCK.

- (1) Let down the mechanism if rifle is cocked.
- (2) Remove cocking handle.
- (3) Remove the guard.
- (4) Remove the actuator spring.
- (5) Withdraw the actuator.
- (6) Remove the firing pin or breechblock and replace. Assemble in an order the reverse of disassembling.

REPLACING THE FEED PIECE AND THE EJECTOR.

- (1) Proceed as in the case of exchanging the firing pin up to and including the removal of the actuator.
 - (2) Remove the feed-piece spring.
 - (3) Remove the feed piece.
 - (4) Remove the ejector cap and spring and then replace the ejector with a new ejector.
- Assemble in an order the reverse of disassembling.

REPLACING THE FERMETURE NUT.

- (1) Proceed as in the case of exchanging the firing pin, up to and including the removal of the actuator.
- (2) Remove the barrel.
- (3) Remove the hand guard.
- (4) Remove the locking nut.
- (5) Remove the fermeture nut.
- (6) Replace new fermeture nut and assemble in an order the reverse of disassembling.

OPERATING THE RIFLE.

PREPARING THE RIFLE FOR FIRING.

- (1) Remove rifle from the pack.
- (2) Free the front legs from the leg catches on the hand guard, carry the legs forward until they are at right angles to the barrel, and then by a quick movement separate the legs to their full extent. Place the legs so that the muzzle points in the desired direction and force the feet into the ground.
- (3) Disengage the elevating-mechanism feet from the latch plate on the stock and turn them so that they will lie at right angles to the direction of fire.
- (4) Raise the rear-sight leaf. Cock the rifle by rotating the cocking handle knob to the vertical position and then drawing the latter to the rear until the sear engages in the sear notch of the actuator.
- (5) Push the cocking handle forward, turn to the right and set at "S," safety, until ready to fire.
- (6) Remove the feed strips from the ammunition box and place conveniently for loading.

FIRING.

- (1) Set rear sight for range and deflection.
- (2) Raise the feed piece to its highest position.
- (3) Load by inserting the loaded feed strip into the feed guides and push the former to the left until the first cartridge is against the cartridge stop, which is shown by the protrusion of the left end of the cartridge stop from the holder. Under normal conditions the rifle will be operated by two men, one doing the firing and the other doing the loading.
- (4) Unlock the elevating mechanism by rotating the binder lever to the right and rear. Raise or lower the stock to approximately the proper elevation. Release the elevating-screw slide, adjust the outer elevating screw to the proper elevation, and clamp by pushing the binder lever forward.
- (5) Turn cocking handle to "R," repeater, or "A," automatic, and release the piece by drawing the trigger directly to the rear. By releas-

ing the trigger while firing, with the cocking handle set at "A," the firing can be stopped. The rate of fire can be controlled to some extent by the proper adjustment of the regulator. Upon normal conditions and for accurate firing the regulator should be so adjusted that there will be a minimum vibration. The maximum effect of the gas on the actuator occurs with the regulator set at "0."

There is no normal setting for the regulator in the sense that the settings for all guns under any condition may be alike. The amount of lubrication, wear of parts, stiffness of springs, resizing of feed strips, temperature, and various other conditions demand the varying adjustments for gas be made accordingly, regardless of the settings for other guns or even of previous settings for the same gun. *Use only sufficient gas for the proper operation of the mechanism, and no more.* The proper setting will ordinarily be found anywhere between (first) the smallest setting that will give sufficient ejection of fired cases without cutting of the ejector into their heads, and (second) the largest setting which will still give enough travel to the actuator to prevent automatic firing with the cocking handle at "R."

(6) The barrel should be cooled by means of the cooling spoon after about 300 rounds of continuous firing. The rifle may be fired 1,000 rounds without cooling, without serious injury to the barrel, but this should be avoided as far as possible.

PREPARING THE RIFLE FOR PACKING.

(1) Remove feed strip from rifle if partially fired. This can be accomplished by first cocking the rifle, then with the right hand press upward on the lower end of the feed piece until the pawl of the feed piece spring is clear of the feed strip. With the left hand withdraw the strip from the rifle.

(2) Let down the mechanism.

(3) Lower the rear-sight leaf.

(4) Secure the elevating mechanism in the traveling position.

(5) Close the front legs and engage the latter in the leg catches on the hand guard.

CLEANING AND CARE OF THE RIFLE.

In order that the rifle may work smoothly it is necessary that it be thoroughly cleaned and oiled after firing. All traces of fouling from the powder gases should be removed from those parts exposed to them. This is especially true of an automatic rifle of this type. The actuator and regulator piston should be removed immediately and thoroughly cleaned and oiled. Warm water, with bicarbonate of soda in solution, will aid considerably in removing the fouling. The small pieces of brass, due to the shearing of the cartridge case

on the clips of the feed strip, should be carefully removed from the mechanism.

It has been found that a deposit of metallic fouling is left in the bore of the rifle when ball cartridges, caliber .30, model of 1906, of earlier manufacture, are used, and a solution for the removal of metallic fouling has therefore been issued by the Ordnance Department to all post ordnance officers for reissue to organizations in accordance with the following table of annual allowances:

For a machine-gun company or troop:	Ounces.
Ammonium persulphate.....	30
Ammonium carbonate.....	30
Ammonia, 28 per centum.....	120

One ounce of ammonium persulphate, 200 grains ammonium carbonate, 6 ounces ammonia (28 per cent), and 4 ounces water will make a sufficient quantity to clean 20 rifles. If no scales are available for weighing the ingredients, they may be measured, and the equivalents are as follows:

1 ounce of ammonium persulphate equals two medium heaping spoonfuls.
200 grains ammonium carbonate equals one medium heaping spoonful.
6 ounces ammonia, 28 per cent pure, equals three-eighths of a pint.
4 ounces water equals one-fourth of a pint.

The spoon referred to above is the spoon issued by the Ordnance Department for the mess outfit.

The solution is made as follows:

The carbonate and persulphate should first be pulverized and mixed together and the ammonia and water added, after which the mixture should be thoroughly stirred. The solution should stand for half an hour before using. The bore of the rifle should be plugged with a cork or wooden plug at the breech end and just below the metallic fouling. The bore should then be filled with the solution and the muzzle corked or plugged. The solution should remain in the bore for about two hours, or long enough to cut the metallic fouling, after which it should be removed and cotton flannel or other soft material run back and forth through the bore to remove the residue. Great care must be taken to remove the solution from all metallic parts, as it may start rusting in a very short time. Special care should be used in removing it from the breech mechanism. The solution may be used several times, but after it has been once used it should be placed in a bottle and not mixed with any unused solution. This solvent is expensive and should be used economically.

The nozzle and gas chamber of the gas-nozzle ring should be closed with wooden plugs before the solution is poured into the bore.

The solution should be prevented from entering the orifice by keeping this point uppermost during the process. In some cases it has

been found advisable to remove the orifice screw and plug the orifice completely before pouring in the solvent.

If the rifle is not to be used for some time, it should be thoroughly cleaned and all the moving parts given a thin coat of cosmic. This can be best accomplished by warming the latter and applying with the grease brush. Before attempting to fire the rifle, *all this cosmic should be removed*, especially around the ferreture nut, otherwise the rifle will not function properly. *The moving parts of the mechanism should then be lightly oiled before using.*

Whenever it is noted that the regulator can not be rotated by hand it should be removed by the dismounting wrench and the gas chamber cleaned of fouling by the gas-cylinder cleaner, which is furnished with the accessories.

The firing pin, the breechblock, and the actuator are casehardened and under no conditions should be touched by a file. After a series of firings the front of the upper lug of the firing pin may appear battered, due to that force which is required to carry the claw of the extractor over the head of the cartridge case, which is exerted wholly on this shoulder. Should this shoulder become battered sufficiently to cause the firing pin to bind in the breechblock, the former should be removed and a new firing pin inserted. To file the firing pin would make matters worse by exposing the soft steel beneath and increasing the trouble.

A jointed cleaning rod with six cleaning brushes is furnished with each rifle.

Sperm oil only shall be used for lubricating metallic bearings at contact surfaces.

GENERAL INFORMATION CONCERNING THE USE OF THE RIFLE.

In the following paragraphs the various breakages, jams, and other difficulties experienced in the use of this rifle in service will be discussed and certain remedies therefor suggested.

(A) BREAKAGES.

There appears to be no doubt that a very large percentage of breakages of parts occurring in rifles in service can be traced to inexperience on the part of the operator in the use of a complicated machine and in many cases to careless handling thereof without a thorough study of the rifle itself and the information available concerning it. In two very exhaustive tests of this rifle carried on under service conditions breakages were practically unknown.

Whatever the cause of the breakage may be, it is evident that with nearly all breakages a stoppage of fire is certain to occur, and that in many cases a serious jam will follow. For a stoppage of fire of this kind the only remedy is naturally to replace the damaged

part. Whether a serious jam should follow such breakage depends almost entirely on the extent of familiarity with the construction of the rifle by the personnel operating it, and the only suggestion that can be offered for overcoming difficulties of this kind is to study the rifle in all its parts and obtain extensive experience by constant practice of taking the rifle entirely apart and again assembling it.

(B) JAMS.

From all indications it appears that the greatest difficulty experienced with the rifles in service is not due to breakages as much as it is due to jams from other causes, and for that reason this difficulty will be discussed in somewhat greater detail.

Except for breakages of parts it is a fact that practically all jams can be traced to a cause that would not exist were the operator thoroughly familiar with the mechanism and were the parts taken care of properly. This remark applies to a large extent to breakages also, since these in many instances are due to careless handling.

It is therefore of the greatest importance that the mechanism should be carefully studied, both from actual observation of the rifle as well as from the description given in the handbook. It is essential that, before firing, all trace of cosmic or grease should be carefully removed. All working surfaces should then receive a light coating of thin sperm oil. Particular care should be taken to see that no foreign substances are located between bearing surfaces.

After careful examination of every part to see that it is thoroughly cleaned and oiled and correctly assembled, it is then simply a question of so adjusting the various parts that the operation is smooth and continuous. To attain this requires constant careful study and considerable experience.

The most important features which would affect the proper operation of the rifle are: Gas adjustment, malfunctioning of parts, and ammunition.

(I) *Gas adjustment.*—Proper adjustment of the gas is of the greatest importance. If insufficient gas pressure is used, the rifle will not function properly, while if too much gas is used the speed is liable to become so great as to be dangerous. As will be noted from examination of the rifle, by setting the gas regulator at zero the gas chamber in front of the actuator is reduced to its minimum. The gas pressure on the actuator is therefore maximum. It should be therefore observed that to reduce the gas pressure it is necessary to unscrew the regulator, thereby enlarging the gas space. As previously stated, the amount of lubrication, wear of parts, stiffness of springs, etc., demand that varying adjustments for gas be made accordingly.

The best method of testing the mechanism to see that the correct gas adjustment is used, is to set the cocking handle at R, to insert the

cartridge through the ejection opening, and to fire. If the actuator fails to return far enough to engage the sear, the gas pressure should be increased or the reading of the gas regulator reduced; but if on turning the gas regulator down to "0" the rifle still continues to fire automatic (when set at "R") the trigger has become bent downward. It can easily be adjusted by a light rap upward on the hook with a hammer. This should be continued until the actuator positively engages the sear. In carrying out this adjustment it is essential that the cartridges be inserted through the ejection opening, since if they were fed from the feed strip and the actuator should not return sufficiently far to engage the sear there would be no means of stopping the fire until the cartridges in the clip were used up or until a jam or failure to feed occurred from the insufficient movement of the actuator.

If too much gas pressure is used it will cause the rifle to race and will give an excessive vibration. A rifle which races often causes jams which will not occur with lower gas pressure. This is due to the fact that cartridges will be forced down from the feed strip so rapidly that they will interfere with the empty cartridge case before it is entirely ejected. Excessive gas pressure is also dangerous in that it has been known to cause the ejector to cut small chips from the cartridge cases. These chips clog the mechanism and have been known to lodge in the head of the breechblock and force against the primer, thus firing cartridges before the mechanism is locked. An examination of ejected cartridges will determine whether or not they strike too violently against the ejector.

Insufficient gas pressure will cause the following difficulties:

- (a) Failure to load after the first round.
- (b) Firing automatically with the cocking handle set at R.
- (c) Incomplete ejection.

When any of these difficulties are encountered, the gas pressure should be increased. If the method described above is followed in obtaining the proper gas setting, additional correction should ordinarily not be necessary.

(II) *Malfunctioning of parts.*—As stated above, if the rifle is carefully cleaned and kept in good condition it is believed that with ordinary experience jams due to malfunctioning of some parts will not occur except after they have become worn. If a jam does occur, the first step is obviously to determine the exact cause thereof. This can generally be done by careful examination of the working parts from the left side of the rifle.

If the rifle has become heated during firing, it should first be cooled so that there is no possibility of a loaded cartridge in the chamber being fired from the heat of the barrel. The inspection will usually show whether the jam is due to improper feeding or ejection

of a cartridge case. If due to neither of these causes, the breechblock, firing pin, ferreture nut, extractor, and extractor spring should be inspected for possible breakages. In dismounting no more force than is absolutely necessary to reduce the jam should be applied, as excessive force is liable to damage other parts. The most difficult jams to reduce are those caused by breaking or bending of the firing-pin lugs. Fortunately these jams seldom occur with the firing pins now furnished. In reducing obstinate jams it is frequently desirable to remove both the barrel and guard from the receiver in order to see more clearly the nature of the jam. This allows the actuator to be tapped lightly on either end for freeing the jam. Jams due to broken parts are rare. No specific instructions can be given to cover all cases. A thorough familiarity with the rifle and frequent practice in assembling and disassembling are the best possible training for removing jams of this character.

The most common jams, caused by malfunctioning of the parts, and their remedies are:

1. *An extractor which does not work properly.*—When an extractor becomes worn so that it goes forward too far in its seat on the block, it holds the cartridge insecurely and will often drop it in the ejection opening of the receiver before it is hit by the ejector. The position of the extractor is controlled entirely by the inclined flat surface of its head, which seats against a corresponding surface on the underside of the extractor housing of the breechblock. It is highly important that a file should never be used on this inclined surface. An extractor which has become worn on this surface so that it holds the cartridge insecurely must be replaced. It can not be repaired. Occasionally an extractor will be found which fails to go completely over the head of the cartridge each time. This will cause jams by dropping the empty case into the ejection opening or will fail entirely to extract the case. If this trouble develops, the faulty extractor should be replaced.

2. *A weak or broken extractor spring will cause a jam similar to that described above.*—Sometimes one or two coils at the rear end of this spring will break off, and while the spring will appear perfect to the eye, the breakage can easily be detected by pressing the extractor to the rear with the finger and noting the difference in force required for that spring and a normal one.

3. *Failure of the new cartridge to seat itself properly in front of the breechblock.*—This may be due to one of the following causes:

(a) *Insufficient gas causing faulty ejection.*—This condition results in the cartridge being held by the extractor while the next cartridge is forced down on it, wedging the two in the receiver. The remedy is to increase the gas pressure by screwing up the regulator.

(b) *Strong actuator spring requiring excessive gas to operate the rifle.*—The symptoms and remedy are the same as described in (a). This defect is rarely encountered.

(c) *Cosmic or foreign matter in the working parts.*—This causes the rifle to work sluggishly and requires excessive gas pressure to operate the parts. This is a very common cause of trouble and one which should be continually guarded against by careful cleaning and inspection.

(d) *Bearing of the feed-piece spring pawl on the cover plate.*—This prevents the pawl from dropping into the notch of the feed strip thereby allowing the strip to move backward so that cartridges are not in the proper feeding position. This defect is remedied by filing the pawl of the feed-piece spring until it properly engages, or if the feed-piece spring has become bent it can be overcome by straightening it, using a pair of pliers for the purpose. New feed strips will occasionally wear a groove in the vertical face of the feed-spring pawl. This groove should be removed by filing as soon as it develops, as it will cause the pawl to catch on the feed strip. There should be about $\frac{1}{8}$ -inch space between the rear horizontal edge of the feed-spring pawl and forward edge of rear feed guide; otherwise the pawl will not drop into the center of the opening in the feed strip and will cause a jam.

(e) *Bending of the feed strip and feed guides.*—This is usually due to a bent feed strip, and in rare cases to a bent feed guide, and can be remedied by straightening the strip or the guide.

(f) *Cartridges held insecurely in the feed strip.*—This allows the cartridge to leave the feed strip before the empty case is ejected and causes the two to wedge in the receiver. This defect is remedied by resizing the feed strip.

(g) *Weakened feed-piece spring.*—If the feed-piece spring does not drop into its opening in the rear notch of the feed strip with sufficient force, the cartridge is not forced down in the chamber, and a jam similar to that described in (d) will be encountered. This defect is seldom found. A weak feed-piece spring will fail to force the feed piece down after the last shot, thereby allowing the mechanism to go forward, making it necessary to cock the gun before inserting the next strip. Most of the jams usually attributed to a weak feed-piece spring will be found to be due to the following cause:

(h) *Bent feed piece.*—In ordinary working of the rifle or in reducing a jam the feed piece may become twisted, thus causing improper handling of the feed mechanism. This defect is best remedied by inserting a new feed piece. It is possible to straighten a feed piece, but care must be taken to insure proper timing of the feed mechanism.

4. *Battered or deformed firing pins or breechblocks.*—This can be detected by observing whether or not the firing pin slides freely in the breechblock. These are seldom encountered with the new design of breechblock and firing pin. The defective part should be replaced.

5. *Firing pin being too short or its point broken off.*—This can be detected by removing the breechblock and firing pin and observing the amount which the firing-pin point protrudes from the head of the breechblock. This difficulty will seldom be encountered. In such cases the firing pin should be replaced.

6. *A ferreture nut which binds or rotates unduly hard will consume the power of the actuator spring and will cause a misfire.* This defect seldom occurs, but should it be found it can best be corrected by rubbing down the tight spot on the ferreture nut with a piece of emery cloth.

7. *An excessive amount of foreign substance, such as dirt or shavings from the cartridge cases.* It will be found that feed strips shave very small brass pieces from the cartridges which collect in the ferreture nut or on the rear end of the barrel and prevent a proper movement of the breechblock and ferreture nut, thus causing a misfire.

8. *If the edges of the barrel at the entrance to the chamber are sharp they will shave the sides of the cartridge cases and either prevent the cartridge from entering or increase the power required to force the cartridge in the chamber, so much that misfires may occur exactly as they do with a weak actuator spring or a tight ferreture nut.* These sharp edges are best removed with a small scraper or half-round file.

(III) *Ammunition.*—It is evident that failure of ammunition to work properly will cause a stoppage of firing. Whether the cause of this failure is due to the ammunition itself or some other cause should be carefully ascertained before corrective measures are applied. Under "malfunctioning of parts" are given certain points which may be the cause of misfires and which in no way can be traced to the ammunition. An additional reason for misfire might be a weak actuator spring. Before deciding that this weak spring might be the cause of the misfire care should be exercised, however, to ascertain that other reasons, such as foreign matter or cosmic between bearing surfaces, do not prevent the spring from working properly. A weak actuator spring can actually be detected by pulling on the cocking handle when retracting by hand. An actuator spring which has become set is detected by its failure to reach the rear end of the receiver when assembled. If it is found that the actuator spring is the cause of the failure, it will ordinarily be necessary to replace it, although sometimes it is possible to stretch the spring sufficiently.

For perfect working of the rifle it is essential that only the best ammunition be used. Ammunition of 1909 manufacture or earlier should not be used, nor should reloaded ammunition of a later date if new ammunition is available. If practicable, all ammunition should be of the latest manufacture.

If ruptured shells occur with good ammunition, it is caused by increased head space. The head space increases with the wear of the various parts, such as the threads of the receiver, threads of the locking nut, or threads of the breechblock and ferreture nut and locking lugs on the barrel. The chamber becoming elongated will result in ruptured shells. The majority of cases of increased head space will be found to be due to the wear of the locking nut and can be entirely overcome by replacing it with a new one. If it is found that other parts are affected, replacement of such parts should, of course, be made. This, however, should rarely occur.

Pierced primers cause working parts to foul badly. They are caused by the firing pin being too long, which can be overcome by filing a small amount from the firing-pin point, using extreme care that too much is not removed.

(C) INABILITY TO KEEP ON TARGET DURING CONTINUOUS FIRING.

There has been experienced in service considerable difficulty in holding the rifle on the target due to vibration when firing automatically. The mount, as used in the present service rifle, was adopted on the recommendation of the Board of Line Officers appointed to test the original rifle and was recommended for adoption because of its light weight and facility for transportation.

The greater part of the difficulties can be overcome by the proper regulation of gas. By firing only 10 or 15 shots and then relaying the rifle no great difficulty should be experienced. At the same time, a rapidity of fire as great as is consistent with good results should be maintained.

If the firing is done on ground where the support is yielding, such as sand or gravel, it will be found that setting the front legs and elevating mechanism on a piece of canvas will materially aid in steadiness. There are many other schemes which have been improvised, such as loading down the rifle with filled ammunition boxes or sandbags. All these are undoubtedly an aid to steadiness, but make an added complication and should not be necessary.

The method most commonly adopted in the service to hold the rifle in azimuth is for the gunner to grasp the small of the stock with the right hand, the right fore finger resting on the trigger, the piece firmly held against the right shoulder and canted slightly to the right to cause the inner elevating screw to bind lightly on the elevating mechanism guide rod. The right foot of elevating mechanism can be

elevated slightly by placing earth or sand under it so that the piece itself will not be canted. The left hand grasps the handle of the outer elevating screw and is used to adjust the elevation and to steady the piece.

Various schemes are improvised in different organizations which will generally overcome this difficulty. One such method is the following: By tying a cord around the barrel rest and attaching it to a picket pin placed as a stake 2 or 3 feet in front of the point of attachment, the shock of recoil will be much reduced and a greater steadiness obtained.

A leather strap has recently been issued for all rifles. By tying this strap to the lower end of one foot of the barrel rest and passing it through the trigger bow of the guard and securing the other end to the other foot of the barrel rest, in such a manner that when the strap is pulled taut the barrel rests will be inclined forward, a very secure support for the muzzle is obtained.

Although a leather strap has been issued for this purpose, an ordinary cord will answer equally as well.

From observation of the use by the service of this rifle it has been found that in most cases the difficulties of operation and use has been almost entirely overcome as soon as the personnel have become acquainted with the mechanism and have carefully studied the various parts and causes for possible troubles.

DESCRIPTION OF THE TELESCOPIC SIGHT, MODEL OF 1908.

[Plates VIII and IX.]

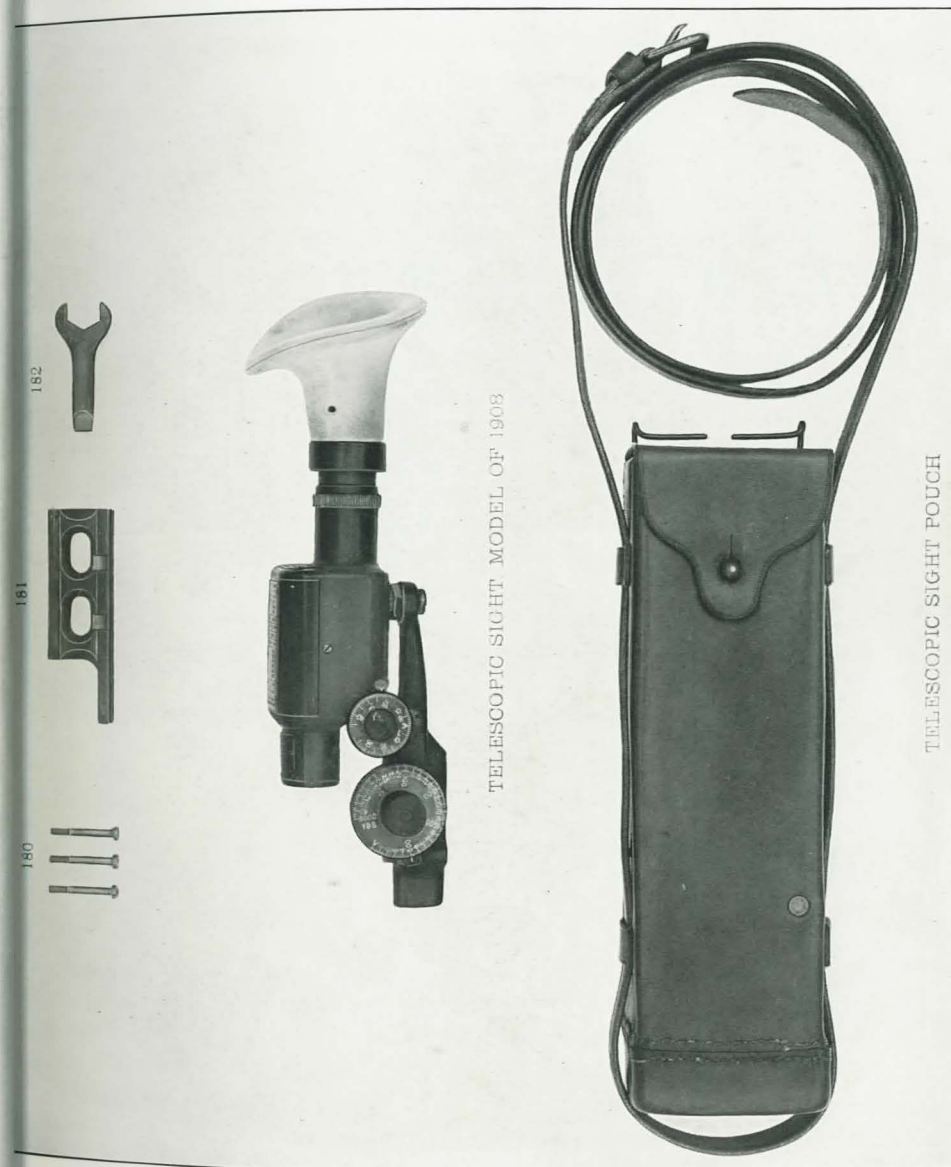
Nomenclature.

[Numbers before components refer to numbers on Plates VIII and IX. Property classification: Class VII, section 1.]

180. Sight-bracket screws.	} Parts of	202. Table screws.
181. Telescopic sight bracket.		203. Slide.
182. Screw-driver wrench.	gun.	204. Lever spring.
183. Body.		205. Range dial.
184. Reticule holder.		206. Range-dial washer.
185. Reticule.		207. Range-dial knob.
186. Triple eye lens.		208. Spring cotter (for knob).
187. Triple eye-lens holder.		209. Catch.
188. Eye cap.		210. Catch spring.
189. Eye-cap ferrule.		211. Catch nut.
190. Focusing lock nut.		212. Range-dial-washer pin.
191. Objective.		213. Lever.
192. Objective cell.		214. Spanner nuts.
193. Body screws.		215. Spring cotters (for nuts).
194. Prism holder.		216. Drift screw.
195. Prisms.		217. Drift-screw washer.
196. Prism cap.		218. Drift dial.
197. Prism-cap spring.		219. Drift-dial washer.
198. Prism cap.		220. Drift-dial screws.
199. Prism-cap screws.		221. Adjusting screw.
200. Wind and range table.		222. Adjusting-screw nut.
201. Drift table.		223. Drift-dial pin.

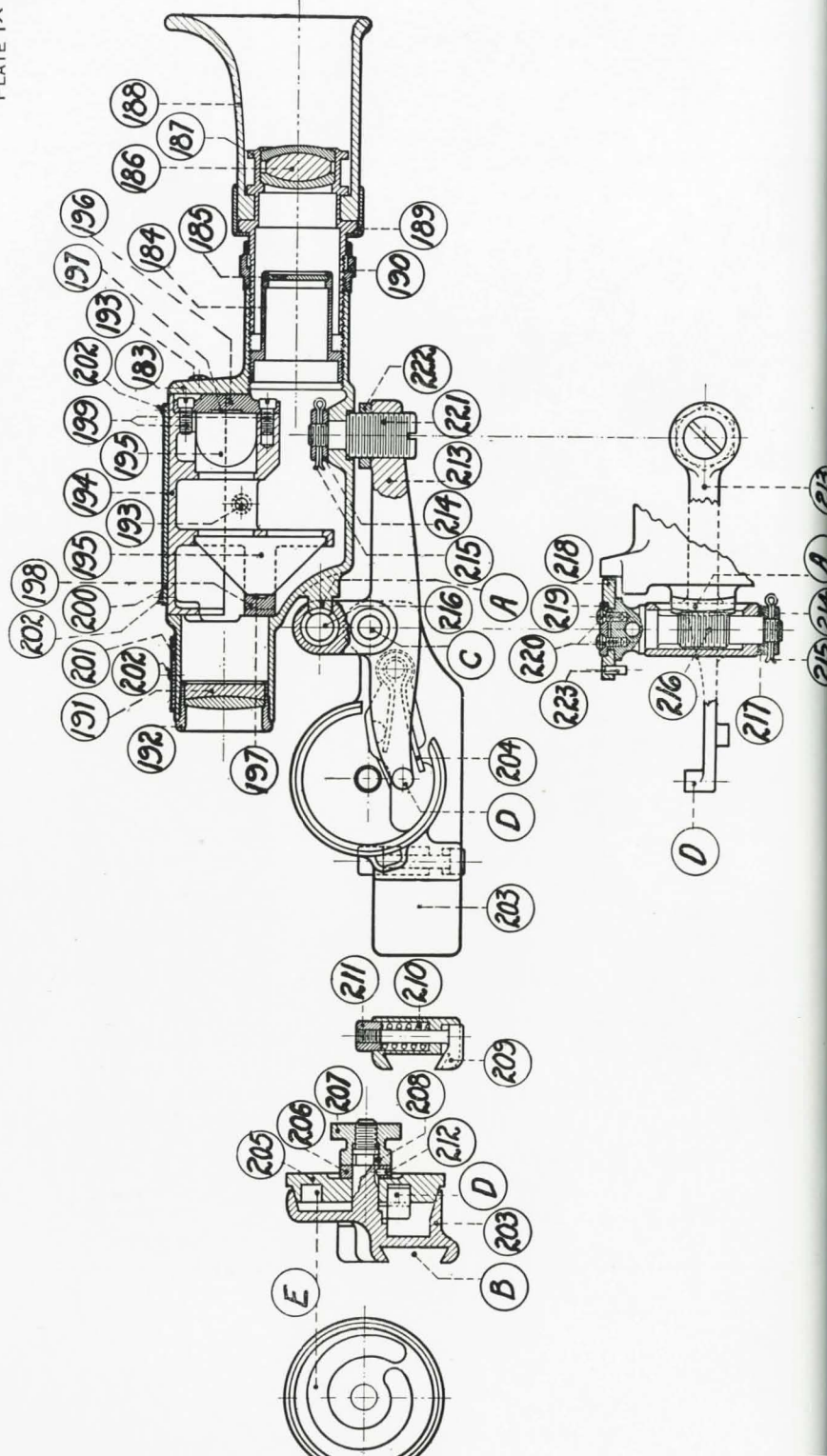
The telescopic sight consists of three essential parts, the telescope, the lever on which the telescope is mounted by a vertical axis, and the slide to which the lever is secured by a horizontal axis. Graduated dials provide means for turning the instrument on both of these axes.

The telescope: In the telescope body is mounted the objective cell for the objective, which has a clear aperture of thirteen-sixteenths inch, a focal length of 7 inches, and gives, with the eyepiece, a power of six diameters and a field of $4\frac{1}{2}^{\circ}$. The telescope is provided with Porro erecting prisms, mounted in accurately milled recesses in the prism holder and held in place under constant pressure by the prism-cap springs of the prism caps, the caps being secured by the prism-cap screws. The telescope has a reticule holder, into which is spun the glass reticule, on which are etched vertical and horizontal cross lines and a stadia line, the latter being so placed that it spans the height (5 feet 8 inches) of an average man standing at a distance of 1,000 yards. The latest telescopic sights have three stadia lines for



TELESCOPIC SIGHT MODEL OF 1908

TELESCOPIC SIGHT POUCH



ranges of 1,000, 1,500, and 2,000 yards, respectively. The telescope has an eyelens holder for the Steinheil triple achromatic eyelens. The holder has a long threaded portion which screws into the body, and by which means for focusing is secured. The eyelens holder is locked in position by the focusing lock nut and is provided with an eye cap of soft rubber, fastened by the eye-cap ferrule. On each telescope is fastened, by means of table screws, the wind and range table and drift table, and on the rear face of the latest telescopes is fastened a range plate which shows the ranges corresponding to the three stadia lines.

The lever supports the telescope body by means of the adjusting screw. This screw forms a vertical axis for the telescope, and the segmental worm gear, together with the drift screw and its graduated drift dial, provide means for turning the telescope on this axis for drift and wind corrections.

The slide supports the lever on the horizontal axis. The pin of the lever engages with the internal hardened-steel cam of the range dial, and is kept in contact with it by the lever spring. The inner circumference of the range dial is conical and fits in a conical bearing, so that it can be clamped in any desired position by tightening the range-dial knob against the keyed range-dial washer. By turning the dial the telescope is rotated on the horizontal axis, giving the proper depression angle for range correction.

The telescopic sight bracket is assembled to the receiver of the rifle by means of screws. The sight is mounted on the bracket by means of the dovetail in the slide and is held in position by means of the catch which engages the notch in the bracket. The catch can be released by pressing the knob.

ADJUSTMENT AND CARE OF THE TELESCOPIC SIGHT.

For focus.—In adjusting the instrument at the factory the reticule is set exactly in the focal plane of the objective, which has a universal focus beyond 100 feet, and the eyepiece is set for the vision of an average observer. Should alteration of the focus of the eyepiece be necessary to suit special conditions, unscrew the focusing lock nut and screw the eyepiece out or in until the cross lines of the reticule are sharply defined, and at the same time the image of the target is clearly visible. Then move the head up and down, so that the eye may travel across the eyepiece. If the focus has been correctly found there will be no parallax—that is, no apparent motion of the cross wires with reference to the target when the eye moves across the field. The focus being accurately adjusted, be sure to lock the eyelens holder by tightening the focusing lock nut. The rubber eye cap can now be turned without affecting the focus to any desired

position. If the rubber cap does not turn easily, loosen the eye-cap ferrule and tighten it again when the adjustment is made.

For elevation.—The range dial is graduated from 0 to 3,000 yards by 20-yard divisions. To make elevation adjustment set the sight of the rifle at 500 yards. Set the range dial of telescopic sight at the same range and clamp it. The cross wires of the telescopic sight and the line of sight of the rifle through the open sight should then bisect the target exactly. If the cross wires of the telescopic sight are too high, unscrew the hexagon adjusting-screw nut, using the wrench provided with the sight, and turn the adjusting screw clockwise, which will cause the cross wires to drop on the target. Turning the adjusting screw in the opposite direction will make the cross wires rise. After the adjustment is made be sure to tighten the nut. The rifle is then fired several shots to test elevation, the necessary correction being made by the movement of the adjusting screw until a satisfactory elevation is obtained.

For drift.—The graduations on the drift dial correspond to 1 inch on the target at a range of 100 yards. Turning the dial clockwise corrects to the right, as indicated by the letter R, and counterclockwise to the left, as indicated by the letter L. There are 38 points of left and 46 points of right drift correction. The drift dial should read "0" when the optical axis of the instrument is parallel with the bore of the rifle. Should it be necessary to adjust the dial, make the optical axis of the instrument parallel with the bore of the rifle, loosen the two drift-dial screws, which will permit rotating the dial without moving the drift screw, set the dial exactly at "0," and clamp the screws firmly again.

CARE AND PRESERVATION.

Telescopic sights are necessarily delicate instruments and must not be subjected to rough usage, jars, or strains. When not in use the telescopic sight should be kept in its case and stored in a dry place. It should be occasionally examined to insure its not being corroded, and all traces of dust or moisture should be removed before being put away. To obtain satisfactory vision the glasses should be kept perfectly clean and dry. In case moisture collects on the glasses, place the telescope in a gentle warmth; this is usually sufficient to remove it. A piece of chamois skin or a clean linen handkerchief will answer for cleaning purposes, care being taken that the cleaning material does not contain any dirt or grit. These sights before issue are carefully adjusted and their adjustment proven by actual firings. The prism holder should never be opened except by a competent person. The body of this telescope and its objective must remain intact. The eyepiece can be removed after loosening

the focusing lock nut and the eyelens and reticule then cleaned. Before incasing the prisms at the factory the interior of the body is thoroughly cleaned and all particles of dust removed. If any fine particles should be left in the body, or if the body should be opened and particles enter, they will settle upon the reticule and, when magnified by the eyelens, obscure the vision. Four small holes are punched through the rubber eye cap to permit the escape of air on recoil, thereby preventing suction on counter recoil.

POUCH, MODEL OF 1911, FOR TELESCOPIC SIGHT, MODEL OF 1908.

The pouch furnished for the telescopic sight is made of russet collar leather. It is provided with a double-hook and a leather strap, so that it can be carried either on the cartridge belt or over the shoulder.

AMMUNITION.

The ammunition used in this rifle is the same as that provided for the United States rifle, caliber .30, model of 1903. It is fed into the rifle by means of feed strips, holding 30 cartridges each. The cartridges are located in the feed strips by means of a loading tool.

FEED STRIP.

[Plate X.]

With each rifle are furnished feed strips made of sheet steel, spring tempered, by means of which the cartridges are fed into the rifle. Each feed strip is designed to hold 30 cartridges.

On each strip are punched three rows of large clips, which hold the cartridges longitudinally, and one row of small clips, which align and hold the cartridges transversely. Ten feed strips are packed in each ammunition box.

THE AMMUNITION BOX.

[Plate XI.]

The ammunition box is designed to hold 10 loaded feed strips (300 cartridges), and is made of seasoned white oak or ash. It is about 18 inches long and nearly 8 inches wide, exterior measurement; the ends and sides are dovetailed together, and the bottom is secured to the former by screws. The body contains five longitudinal partitions, in each of which can be placed two feed strips, the feed strip being separated at the bottom by a wooden cleat. The lid is secured to the body by two strap hinges which extend around and are secured by screws to three sides of the box. The lid is held in its closed position by the lid catch. The latter is a brass L-shaped catch secured in a brass-lid catch frame by a pin. The frame is attached to the lid by three rivets and a brass plate. On the interior is a spiral spring

which supports one end of the lid catch and keeps the opposite end engaged in the brass-box catch frame screwed to the body. By pressing downward on the lid catch the cover can be released. The interior of the box is given a coat of linseed oil and its exterior is painted olive drab. On the left end of the box and the front side are leather handles secured to the box by steel copper-plated pins. The seats for the handles are recessed so the handles will be flush with the sides of the box.

SPARE-BARREL CASE.

The barrel case used for carrying the spare barrel is ordinarily carried on the animal, but may be carried by hand as well. It is lined with sheet brass and has at its bottom a leather block called bottom guide, which serves to hold the barrel in place.

The lid of the case contains another leather guide designed to support the spare barrel in any position it may assume. The hinge on the lid of the case is so located that the barrel may be withdrawn without removing the case from the hanger. The chafing strips are designed to prevent metal parts of the rifle hanger from damaging or wearing the leather.

SPARE-PARTS CASE.

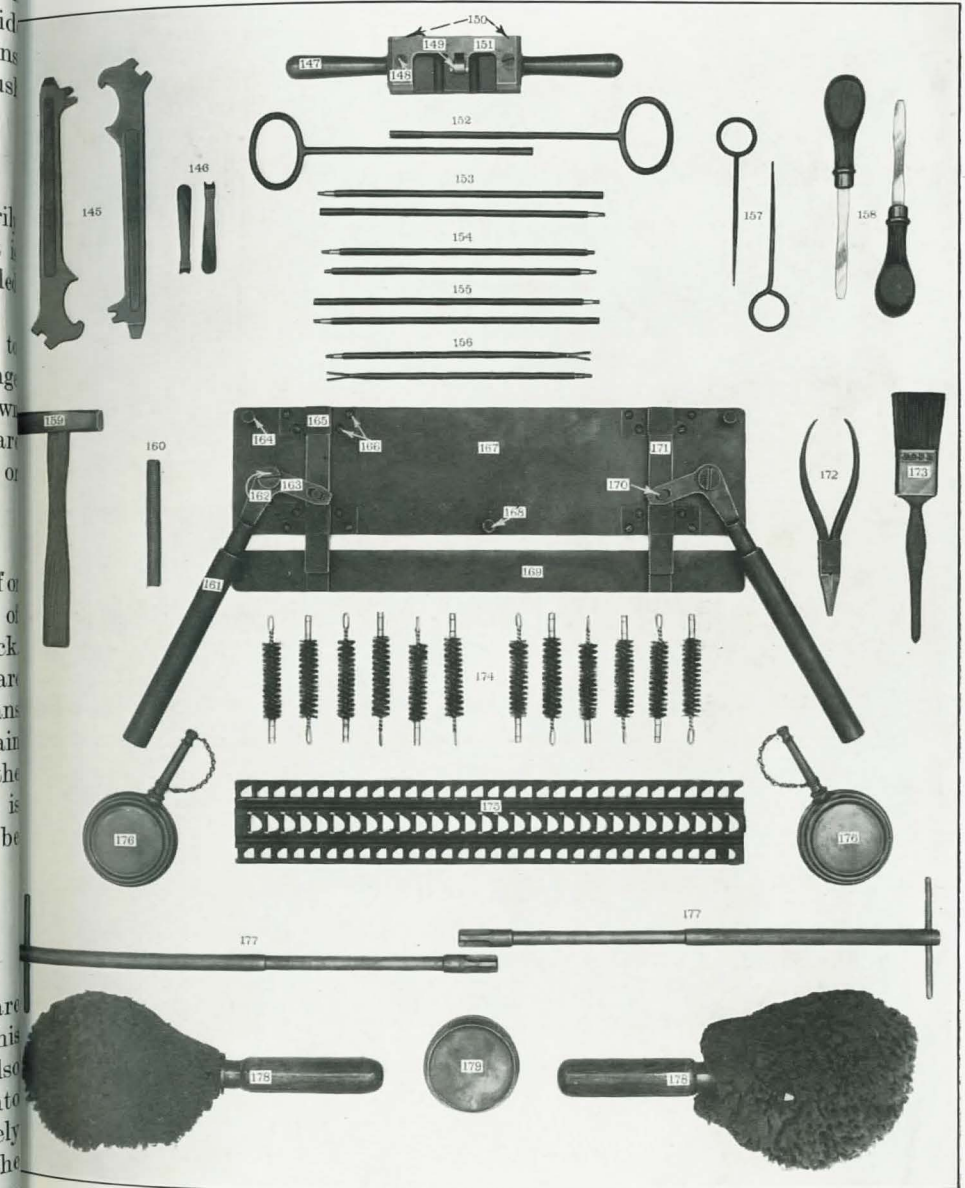
The spare-parts case is used for carrying certain spare parts for the rifle. It is made up in the form of a leather cover, a pocket of which carries a wooden block called spare-part case packing block. This block is recessed and carries on the bottom side two spare stocks and cleaning brushes, the latter being held in place by means of the brush slides; on the other side of this block are carried certain spare parts for the rifle. A duck cover is pulled tightly around the block, which is then inserted into the leather cover. The case is designed to be carried as a top load on the pack frame, but may be carried by hand by means of a convenient handle.

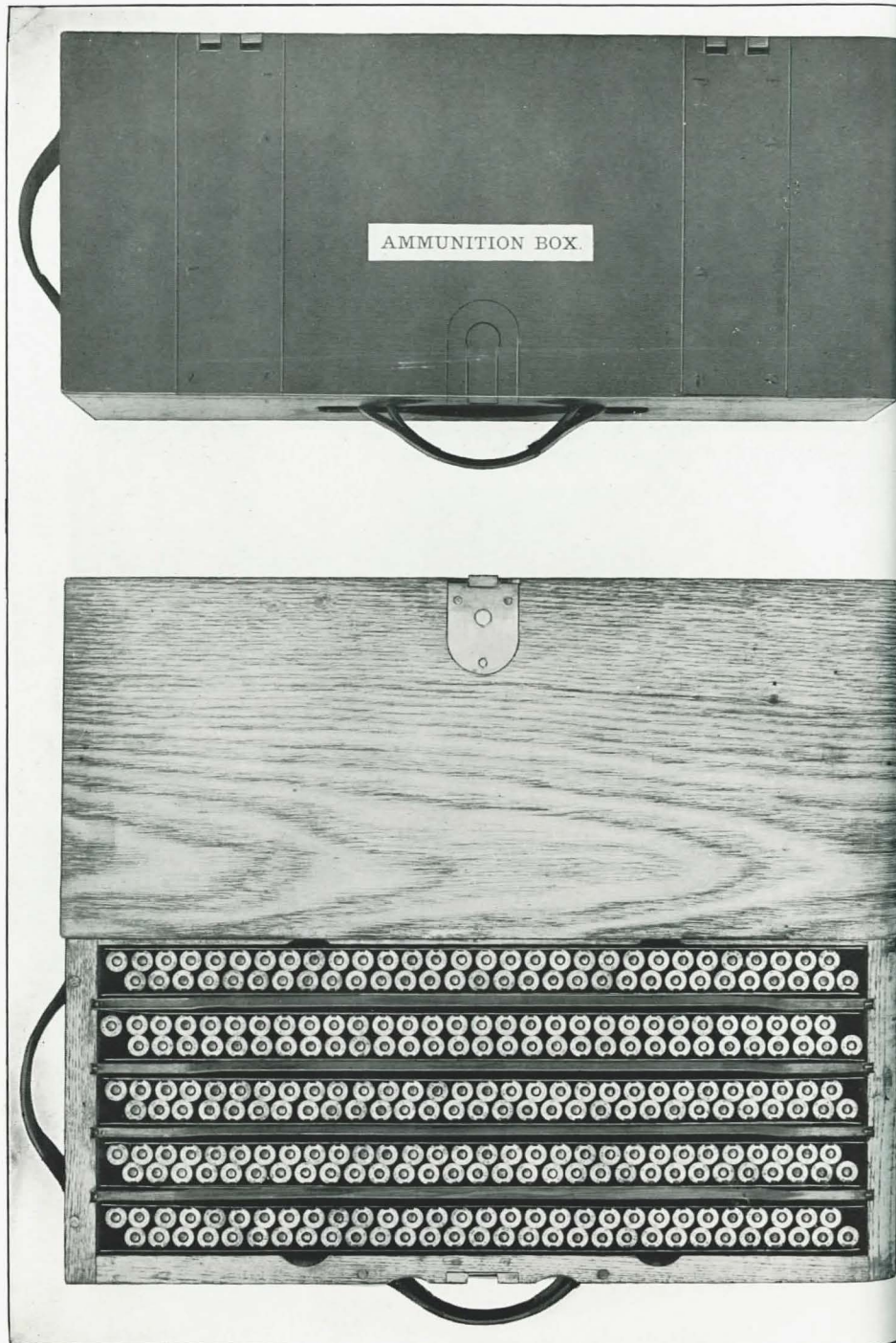
THE LOADING TOOL.

[Plate X.]

The strip guide of the loading tool is a large plate on which are two guides into which the feed strip slides. On the bottom of this plate are riveted one long and two short loading-tool feet, and also four pushing-bar guides slides, each secured by four screws. Into these slides are inserted the pushing-bar guides, which are securely riveted to the pushing bar. The function of the latter is to force the cartridges into the feed strip. This pushing bar is actuated by a bent lever which rotates about the lever axis, the latter screwed to the bottom of the strip guide. One end of the lever is slotted and engages the pushing-bar axis on the guides, the other end is threaded

PLATE X





and has the handle attached. The handles are made hollow in order to reduce weight.

To use the loading tool, separate the handles to their full extent and insert a feed strip into the guides, with the edge having the small clip toward the handles. The cartridges are then placed in the clips and pushed forward as far as possible by hand. Then grasp the handles, draw inward, and force the heads of the cartridges over the small clip near the edge of the feed strip. Remove the loaded feed strip by sliding the latter from the loading tool. The loading tool can be used to great advantage with a number of men working, one man with the loading tool forcing the cartridges into partially loaded feed strips, while the others are starting the cartridges by hand into the feed strip.

It has been found that the greatest speed in placing cartridges in the feed strip can be obtained by removing one cartridge from each clip, inserting it with the left hand into the strip, and at the same time spreading the remaining four cartridges of the clip with the right hand and thrusting them into the feed strip. The clip can then be removed with the right hand.

In making requisitions for spare parts for the loading tool it should be noted that there are three lengths of screws for assembling the pushing-bar slide guide to the strip guide, viz, long, medium, and short, according to the thickness of the strip guide at the point of assembling. The length desired should be stated. There are loading-tool levers, left, and loading-tool levers, right. The kind desired should be stated in the requisition.

THE RESIZING TOOL.

[Plate X.]

The resizing-tool frame is made with a handle at each end. In the center is a deep cut for the feed strip, while just above is the seat for the resizing-tool roller support. On the bottom are the four holes for the blocking screws. The resizing-tool roller support is assembled to the frame with two adjustment screws, the four blocking screws abutting against the underside of the support. In the center of the support are two lugs to which the roller and its axis are assembled.

To use the resizing tool, loosen the adjusting screws and raise the support if necessary, by the blocking screws, until a feed strip can be easily inserted. The feed strip should be inserted in the open side of the support with center clips pointing to the rear. The support should be so adjusted that the roller will force the center clip over sufficiently so that the cartridge will be firmly held in the feed strip. A piece of metal about the thickness of a penny (0.05) inserted under

the support will give the proper gage. Several trials will probably have to be made before the proper adjustment is obtained. When a vise is accessible, it will be found most convenient to hold the resizing tool firmly in the vise, with a man on one side pushing the strips into the resizing tool and another on the opposite side pulling them through the tool.

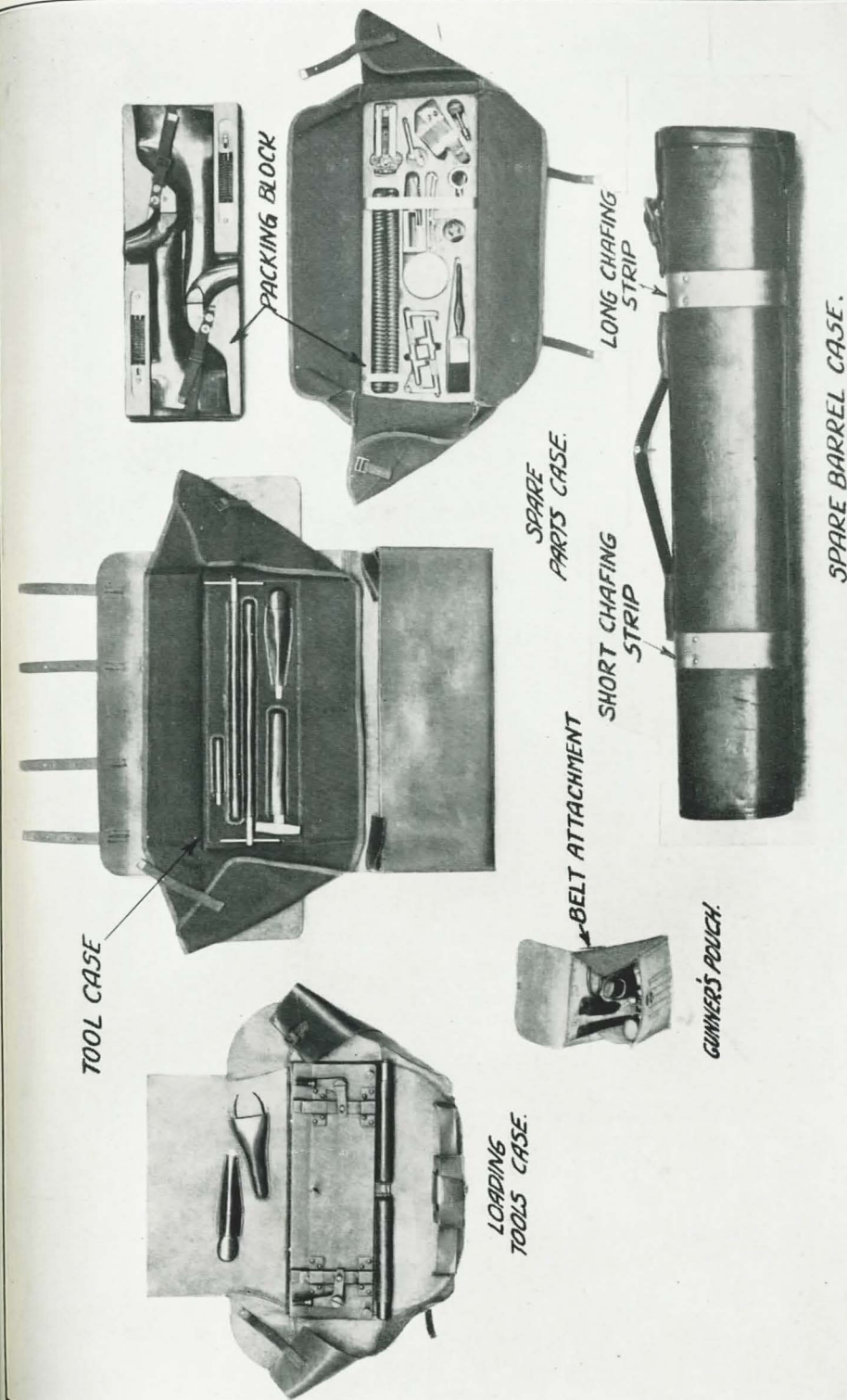
The feed strips should be resized whenever it is noticed that the cartridges are not being firmly held. It will usually be found best to resize feed strips at each reloading, though some strips can be used a number of times without resizing.

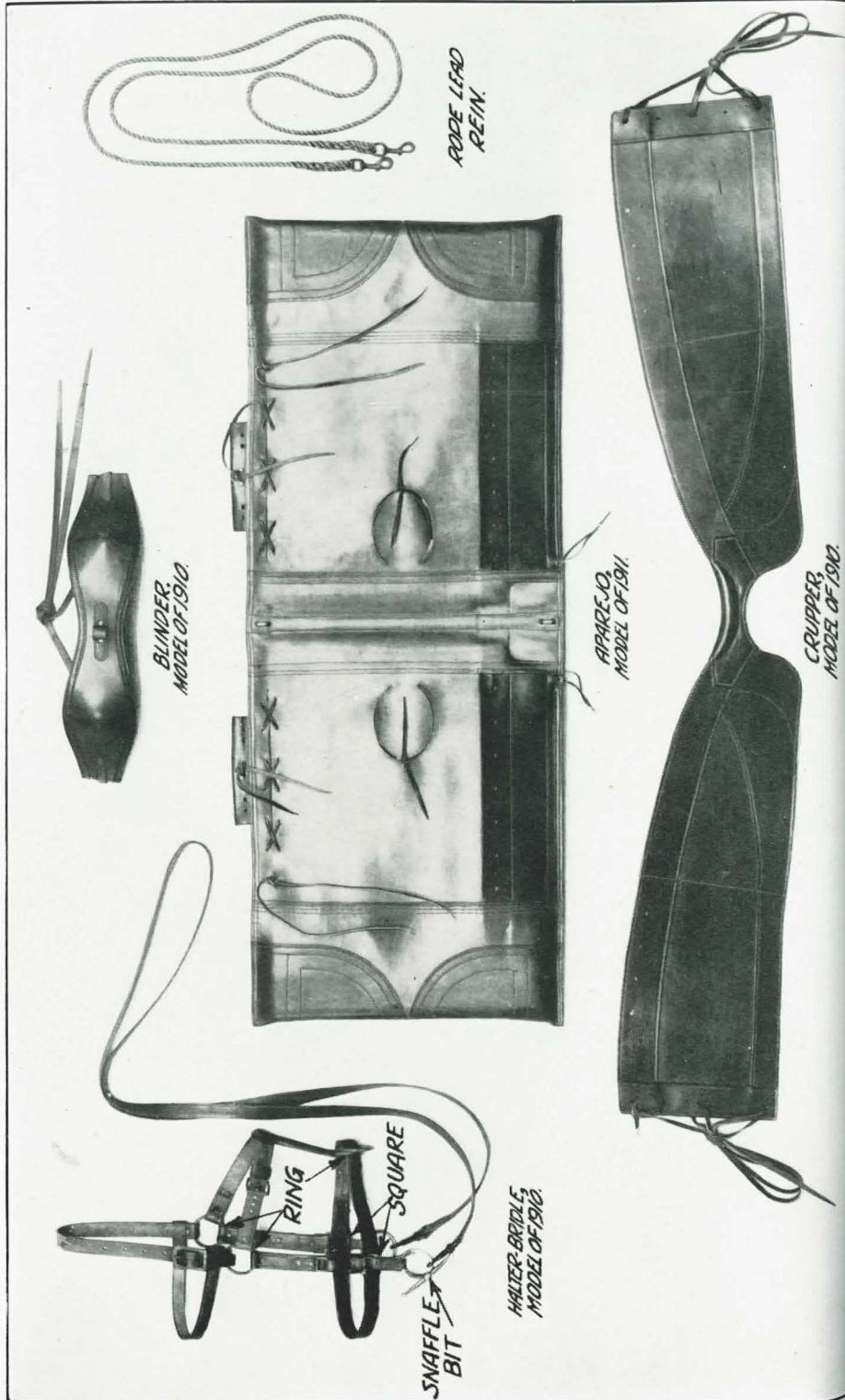
LOADING-TOOLS CASE.

This article is made of leather and carries the tools shown on page 66. It is intended to be lashed to the top of the pack frame when on the road, but can be carried by the soldier as well.

GUNNERS' POUCH.

The gunners' pouch is designed to carry the articles shown on page 64. For transportation it is ordinarily carried in a leather pocket on the underside of the rifle case, but in action it should be carried by a soldier on his belt.





PART II.—PACK HARNESS.

The group of parts of the pack outfit used for leading the animal and carrying the load with its special holders is called the "pack harness." It consists of the blinder, halter bridle, corona, saddle blanket, aparejo, sobrejalma, crupper, and aparejo cincha.

These parts are common to all aparejo outfits and may be used without special frames for packing bundles and boxes.

BLINDER, MODEL OF 1916.

A pack mule is ordinarily blinded during harnessing and unharnessing, loading and unloading. The blinder consists of an inner and an outer piece of harness leather stitched together around the outer edges and joined in the rear by leather thongs, the whole shaped to fit closely around the animal's eyes.

HALTER BRIDLE, MODEL OF 1910.

This article is designed to furnish a light, strong head harness for a mule. When leading the animal on the march, the bit and its straps are removed from the headstall and fastened to any convenient place on the pack frame. The two snaps of the lead rein are then fastened to the floating ring, the body of the rein forming a loop convenient for holding in the hand.

In riding the animal the lead rein is used in combination with the bit, headstall, and bit straps as a bridle.

When a mule is picketed to a line, the lead rein serves as a halter strap.

The bit is made of nickel steel to prevent rusting.

CORONA, MODEL OF 1910.

The corona is the first piece of harness placed on the mule's back. It is a saddle pad made of four thicknesses of good quality gray flannel blanket, protected from sweat by a lining of cotton duck. The corona is made in three sizes, and each size is stenciled on the under side to correspond with the size of the aparejo it is intended to accompany. The width is 26 inches for all sizes. In placing the corona it is laid well forward on the mule's back, canvas side down, and then slid to the rear until its front edge is just behind the point of the withers, care being taken that the hair lies smooth beneath it.

When manufactured in quantity, 10 per cent are 58-inch, 15 per cent 60-inch, and 75 per cent 62-inch.

THE SADDLE BLANKET.

The saddle blanket forms additional padding under the aparejo. It is carried under the aparejo and over the corona.

The blanket is made of pure wool of olive-drab shade, with an olive-brown border of two stripes. The blankets are rectangular, 72 by 84 inches. Each blanket has the letters "U. S." and the bursting shell located in the center.

APAREJO, MODEL OF 1911.

This article consists of an aparejo body and one aparejo frame. The aparejo body is made of two rectangular pieces of leather (back and belly pieces) sewed together along the edges and through the middle, forming two pouches. The edges, the middle seams, and particularly the ends are reinforced with heavy leather facings. Handholes for stuffing are left in the belly pieces, and holes and slits laced with thongs are made in the back pieces, so that the frame, or parts of it, may be inserted, removed, or replaced. The carrier pieces and front facings have lacing holes for the attachment and adjustment of the crupper. Two steel chock staples attach the sobrealma and pack frame to the aparejo. The rib sticks are furnished longer than necessary and should be sawed off to the proper length after the boot and top sticks are firmly rammed home. The first three sticks (starting at the front) are of uniform thickness. The remainder are tapered to give the rear of the aparejo more flexibility than the front. The sticks are stamped and are intended to be arranged in a gradually diminishing thickness.

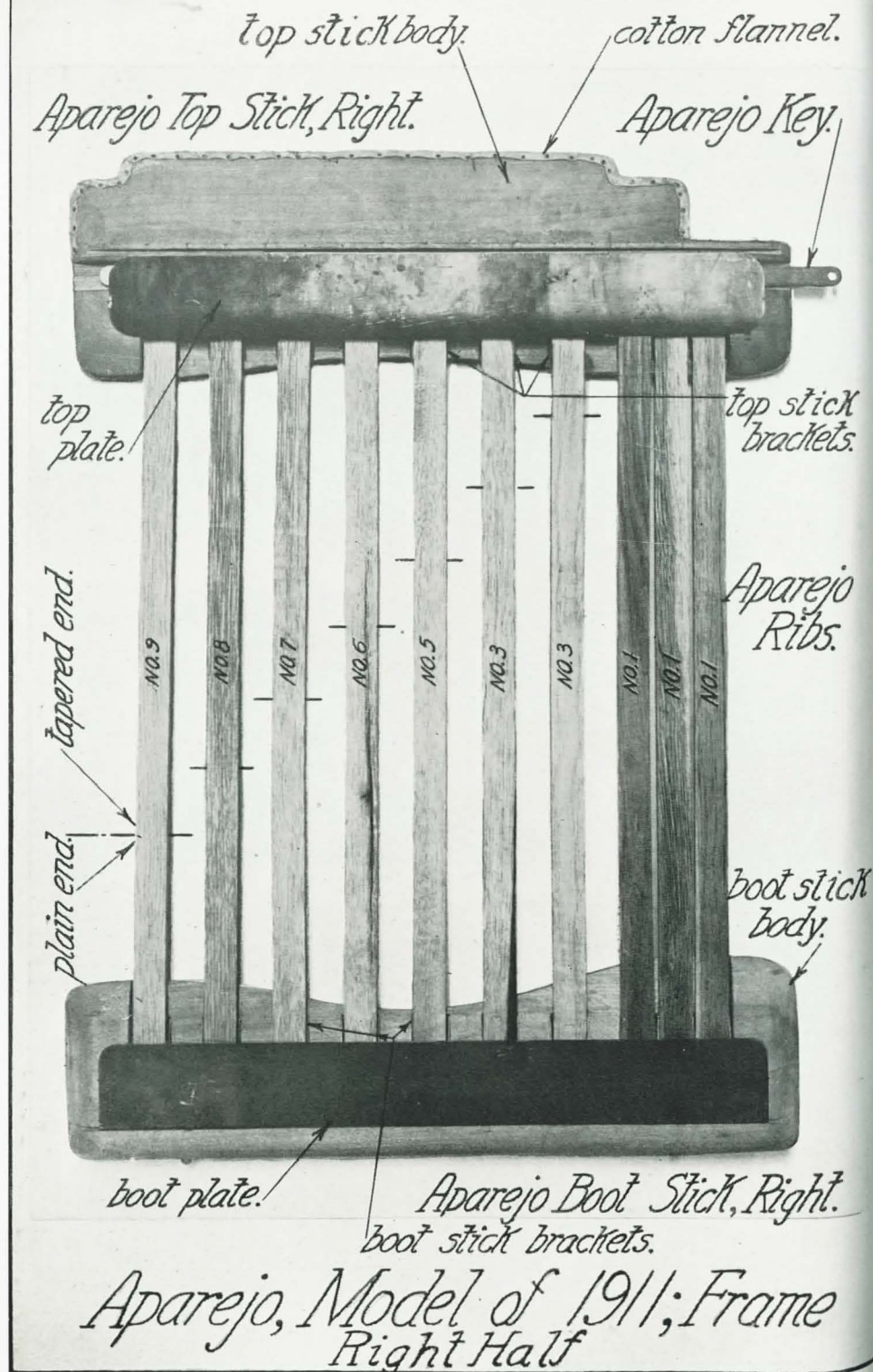
Cloth is tacked to the top stick to prevent the hay from slipping down.

NOTE.—Aparejos are issued to the service with ribs in place. They are furnished in 58, 60, and 62 inch sizes, as follows: 10 per cent, 58-inch; 15 per cent, 60-inch; and 75 per cent, 62-inch. Should repairs or alterations make it necessary to rib up, the butt of the fifth rib is seated in its slot, the overlap at its slot in the top stick is marked and cut away, and the other ribs are cut to the exact resulting length.

SOBREJALMA, MODEL OF 1910.

This article is a waterproof and wear-reducing covering for the aparejo. It is made of one thickness of heavy cotton duck faced around the edges on the upper side with collar leather. Two leather reinforces are placed on the upper side to protect the duck from the wear of the load. Holes are provided through which the chock staples of the aparejo protrude; chock straps passing through these chock staples hold the sobrealma and pack frame on the aparejo. Sobrealmas are made in three sizes, and when manufactured in





quantity 10 per cent are 58-inch, 15 per cent 60-inch, and 75 per cent 62-inch. The size stamped on the sobrejalma is the size of the aparejo for which it is suited.

CRUPPER, MODEL OF 1912.

The crupper is made of russet collar leather, shaped (and padded in the middle) to fit the animal. The side pieces extend forward, across the aparejo, and are laced to it in front and held up at rear by latigo-leather thongs. The depth of the side pieces affords a broad surface to bear against the animal and also prevents the crupper from sagging. The side pieces are reinforced with leather, and those portions which come in contact with the animal's flanks are lined with duck. Cruppers are made in one size only, 78 inches long.

APAREJO CINCHA, MODEL OF 1910.

The aparejo cincha is 10 inches wide and is made of cotton duck, folded and stitched along the middle. Both ends are faced with leather, and the end to which the cincha strap is fastened carries a five-sixteenth-inch steel rod in the fold of the lacing-end piece, while the other end has a curved piece of gas pipe (cincha bar). Fifteen inches from the strap end of the cincha a leather thong (finger loop) is attached, which is used to carry the slack of the cincha strap. The cincha strap is of harness leather and has a rendering ring at one end; this end is attached to the cincha body by a latigo-leather thong. The metal parts are either of bronze or are copper plated to prevent rotting of the leather. The cincha is made in three sizes and when manufactured in quantity 10 per cent are 58-inch, 15 per cent 60-inch, and 75 per cent 62-inch. The size stamped on the cincha is the size of the aparejo for which it is designed.

INSTRUCTIONS FOR SETTING UP THE APAREJO.

To rib up.—Unlace the slits and handholes; soak the aparejo in tepid water for about 15 minutes; drain it and lay flat; back pieces up; insert the boot stick and the top stick through the slit in rear and press them to their places at the boot and the center stitch line, slotted sides up; insert the numbered set of nine ribs through the slit in rear in their numerical order and seat them in that order from collar to rear in the slots of the boot stick and top stick, butts at the boot; secure the top of each rib as it is seated by inserting the aparejo key at the front edge below the collar and passing it over the rib in place; fasten the key bar to the collar by the thong.

NOTE.—The aparejo after being set up should under no circumstances be allowed to dry in the sun.

To fill or pad.—Turn the aparejo over, belly pieces up; procure about 6 pounds of long, fine, soft, elastic hay; taking a little at a time, tease or “mix” it carefully; insert it through the handhole and thus gradually fill the body of the aparejo with a smooth and even layer not more than 2 inches thick.

NOTE.—Other filling may be used in necessity, such as moss, excelsior, curled hair, or sea grass; but these substitutes are difficult of manipulation in alterations necessary to accommodate the rigging to injuries of the mule. By teasing or “mixing” is meant the arrangement of the stalks of the hay so that they will cross one another. The body of the aparejo is that part which comes in contact with the body of the mule. As 3 inches of the lower portion of each boot stick and 3 inches of the upper portion of each top stick *must not* come into contact with the mule, no filling should be pressed under the boot stick or within 3 inches of the center of the stitch line. The body course tapers, however, so as to overlap the boot stick and saddle bar, and also tapers toward front and rear.

To face or dress.—To adjust the aparejo more accurately to the shape of the mule, introduce filling and press it well into the corner of the front boot; working toward the handhole, continue the facing along the boot stick and front edge, gradually increasing its thickness to about 1 inch at 7 inches from the corner and forming its inner edge into the arc of a circle concentric with the handhole, the thickness tapering to the ends of the arc; continue this for 3 inches more toward the handhole, rapidly decreasing the thickness to nothing. Proceed in exactly the same way at the collar; under no circumstances should the collar facing reach within 7 inches of the center of the handhole. Connect the front boot and collar facings by a dressing along the front edge about 3 inches wide and 1 inch thick, decreasing in thickness toward the handhole and toward the middle of the edge.

NOTE.—In facing up introduce the filling with the palm of the hand up, so as not to disturb the body course. In case the leather will not yield enough to permit the filling to be introduced well into the corners, a tamping stick may be used to raise it. This stick, used with the commercial aparejo, is 4 or 5 feet long, 1½ inches in diameter, wedge-shaped for 4 inches from one end, the edge of the wedge being about ¼ inch thick and grooved. The object of the boot facing is to cause the boot stick to carry horizontally and parallel to the center of the mule and to give free action to the mule's elbow. Mules of large barrel will require a thicker facing than described. The object of the collar facing is to cause the saddle bar to carry horizontally and parallel with the center of the mule and to protect the mule's withers. Mules with high withers will require a thicker facing than that described. In setting to the shape of the mule, the

aparejo bends at the middle of the front edge. It is important that the body course remain undisturbed during dressing, and that the instructions given be carefully followed to avoid sore withers or tails and body or belly bunches.

To attach the crupper.—Stand the aparejo on its boots in its normal position; secure a lace thong to the front hole on the upper facing of the crupper on each side and fasten the crupper with short thongs to the center holes of the carrier pieces on the rear of the aparejo; pass the crupper lace thong through the second hole from the top of the front facing of the aparejo, through the second hole of the crupper, through the third hole of the aparejo facing, through the fourth hole of the crupper, and so on, finishing through the bottom holes of the facing and crupper and tying to the crupper hole.

NOTE.—In lacing the crupper to the aparejo, the thong must be passed through the holes from the outside and must not be twisted, the lacing must not cross, and it is important that the tie be made on the last hole of the crupper instead of the aparejo.

Guayaba, willow, dogwood, hickory, or any other wood combining the qualities of permanent elasticity and strength may be used to replace broken ribs. When the set-up aparejo is to be filled, no soaking is necessary; instead, the belly pieces are made pliable by rubbing with a sponge.

Mules weighing 850 to 900 pounds require a 58-inch aparejo; 1,000 pounds, 60-inch; 1,100 pounds, 62-inch.

When the mule is loaded, the cincha, in travel, should free the elbow by about 1 inch; more than this will prevent a proper grip on the belly.

If the boots ride high enough on the body of the mule, or if they reach under the belly, even though they ride horizontally and parallel to the center of the mule, the aparejo will be likely to turn easily. This fault encourages injuriously tight cinching.

If one or both boots flare out or turn in toward the mule, cinch sores, sore tails, or belly bunches are caused.

The width of the collar-arch clearance should be at least 5½ inches. If it is too narrow or too wide, or if the saddle bars slope downward toward the front, there will be sores on the withers; if they slope to the rear, there will be injuries over the loins called “kidney sores.”

If the lacing of the crupper is drawn too tight at the bottom, the lower edge of the crupper will rub the buttocks and cause abrasions.

The object to be attained is the uniform distribution of the weight of a load over that portion of the mule's body which is anatomically suited to the carrying of a burden, so that the saddle will ride with little motion and without friction of the bearing surface on the body. The contact of the bearing surface of the saddle must be close at all

points. As the mule's body swells from front to rear, the more or less cylindrically shaped aparejo, after the body course is laid, must be modified by facing up so as to provide a concave surface to fit over the convex surface. But, as the barrel of the properly conformed mule is nearly cylindrical through the rear half or more of the contact surface, no facing, as a rule, is necessary in the rear part of the aparejo, although conformation may require it occasionally. The above instructions were prescribed by H. W. Daly, chief packmaster, Quartermaster's Department.

CARE OF RUSSET LEATHER.

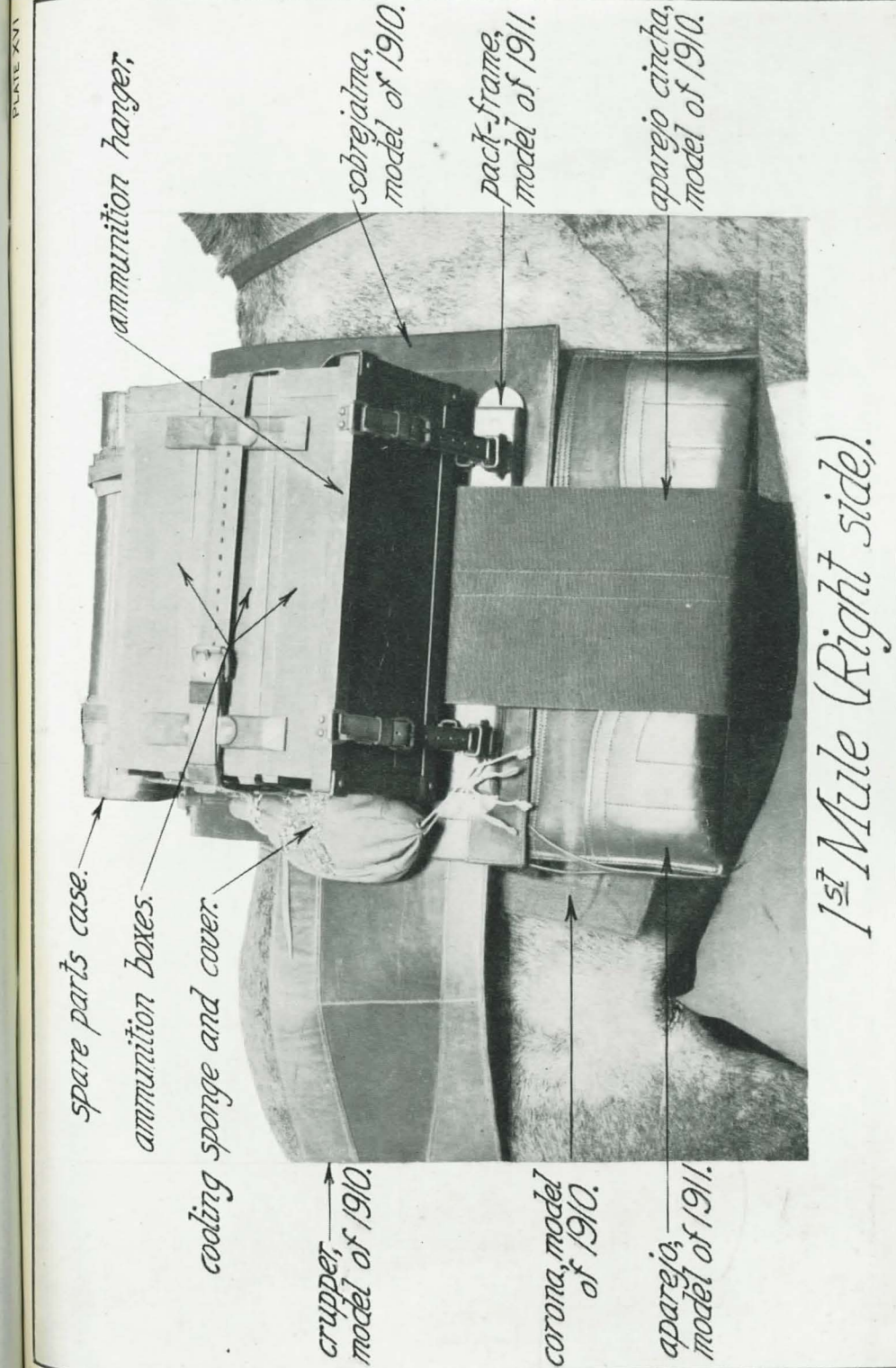
Leather equipments which have become wet should be dried in the shade. Wet leather exposed to the direct rays of the sun or to the heat of a stove or radiator becomes hard and brittle. *Only cool or lukewarm water should be used on leather; the use of hot water is prohibited.*

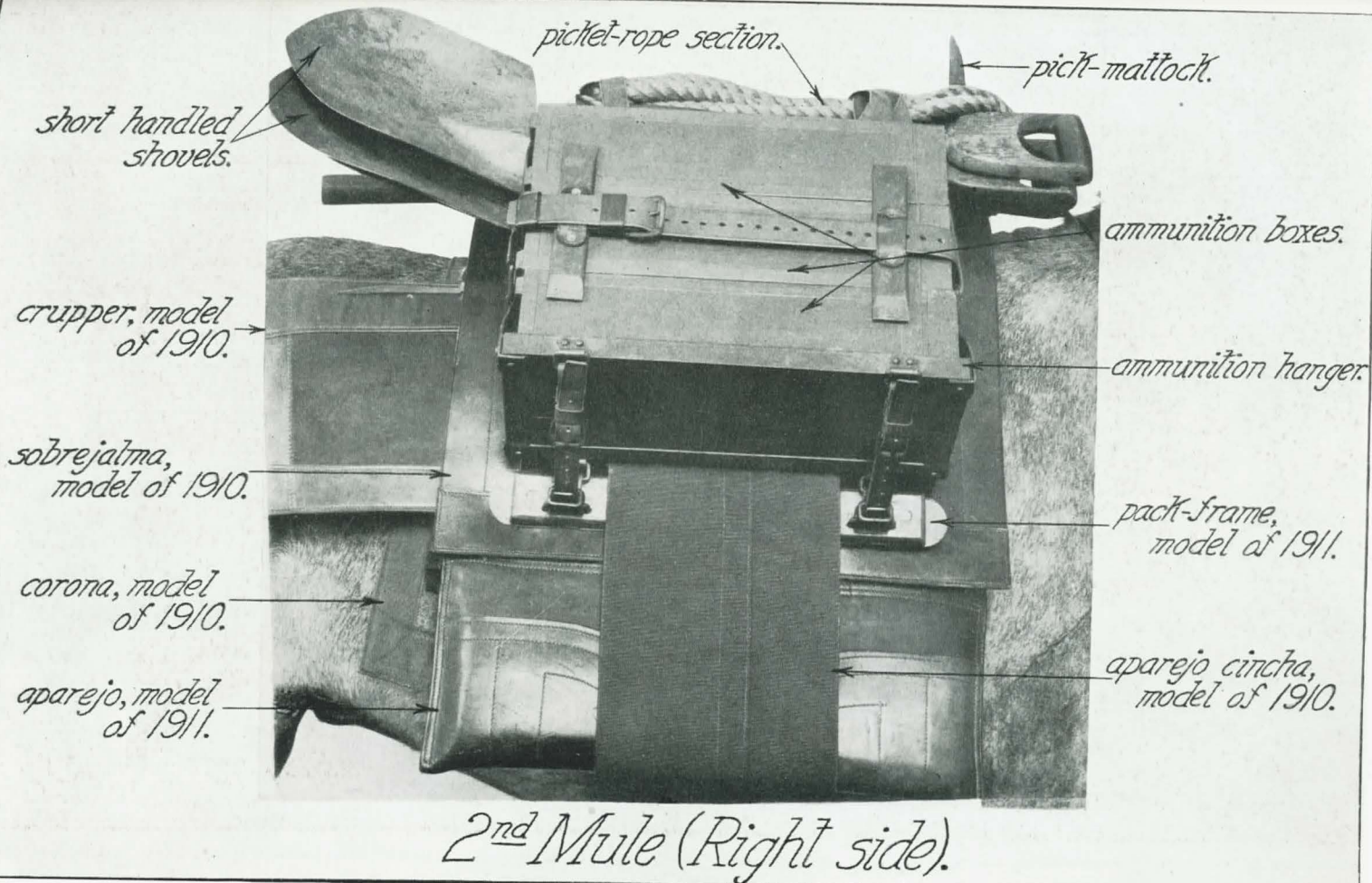
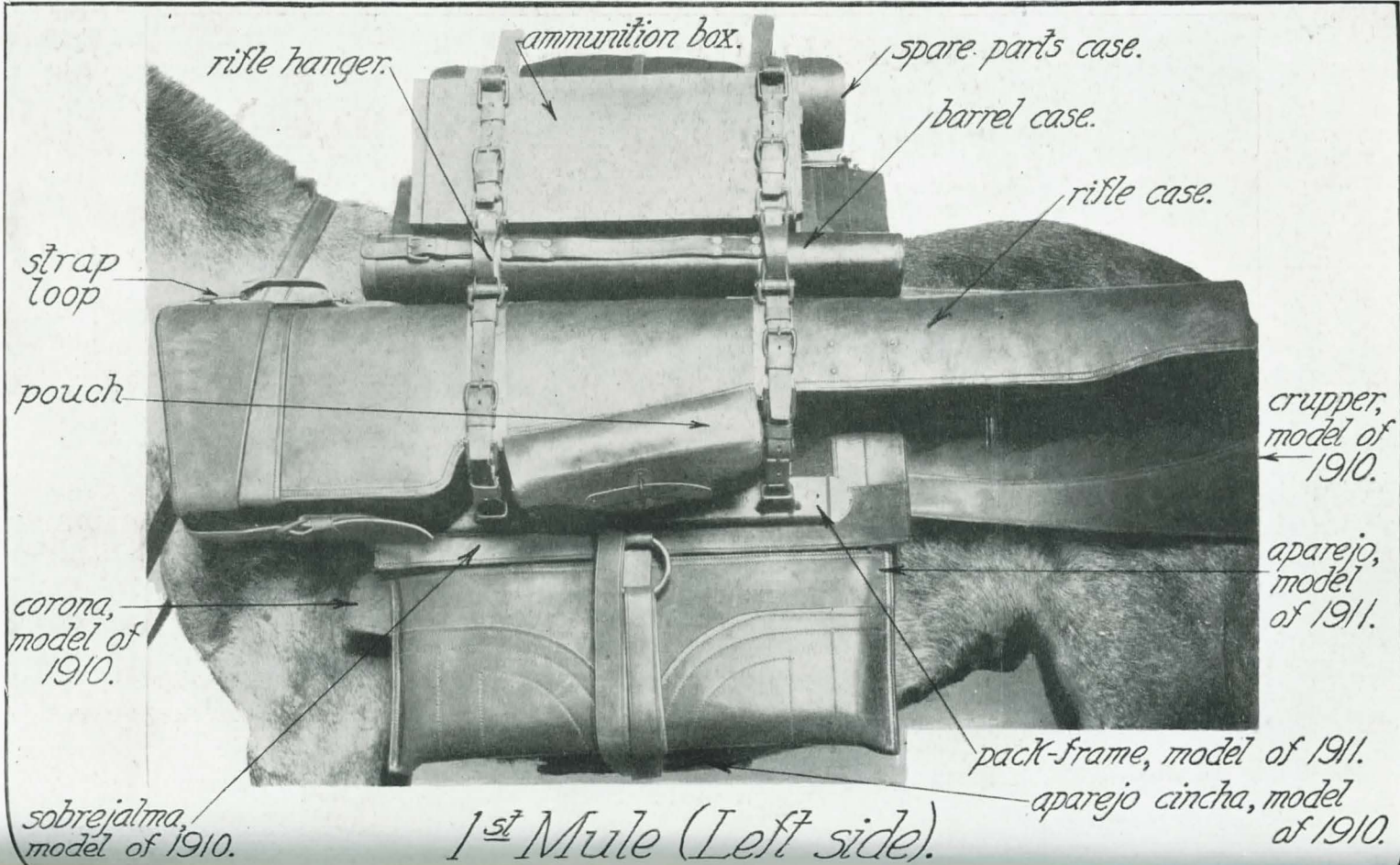
When russet-leather equipments become soiled in service they should be cleaned by carefully washing the leather with a sponge moistened with a heavy lather made of clean water and castile or Frank Miller's soap, and then rubbing vigorously with a dry cloth until the leather is completely dry.

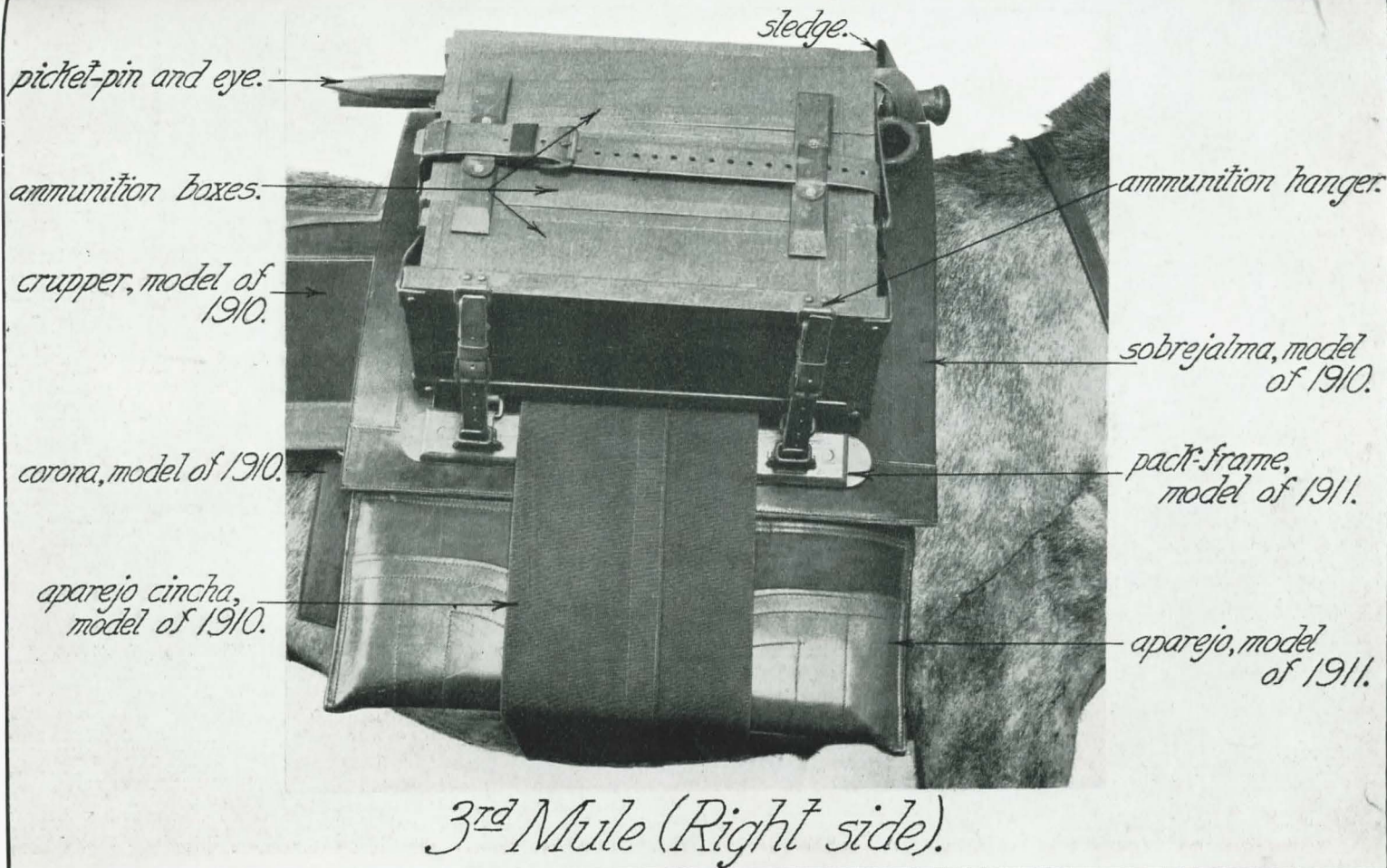
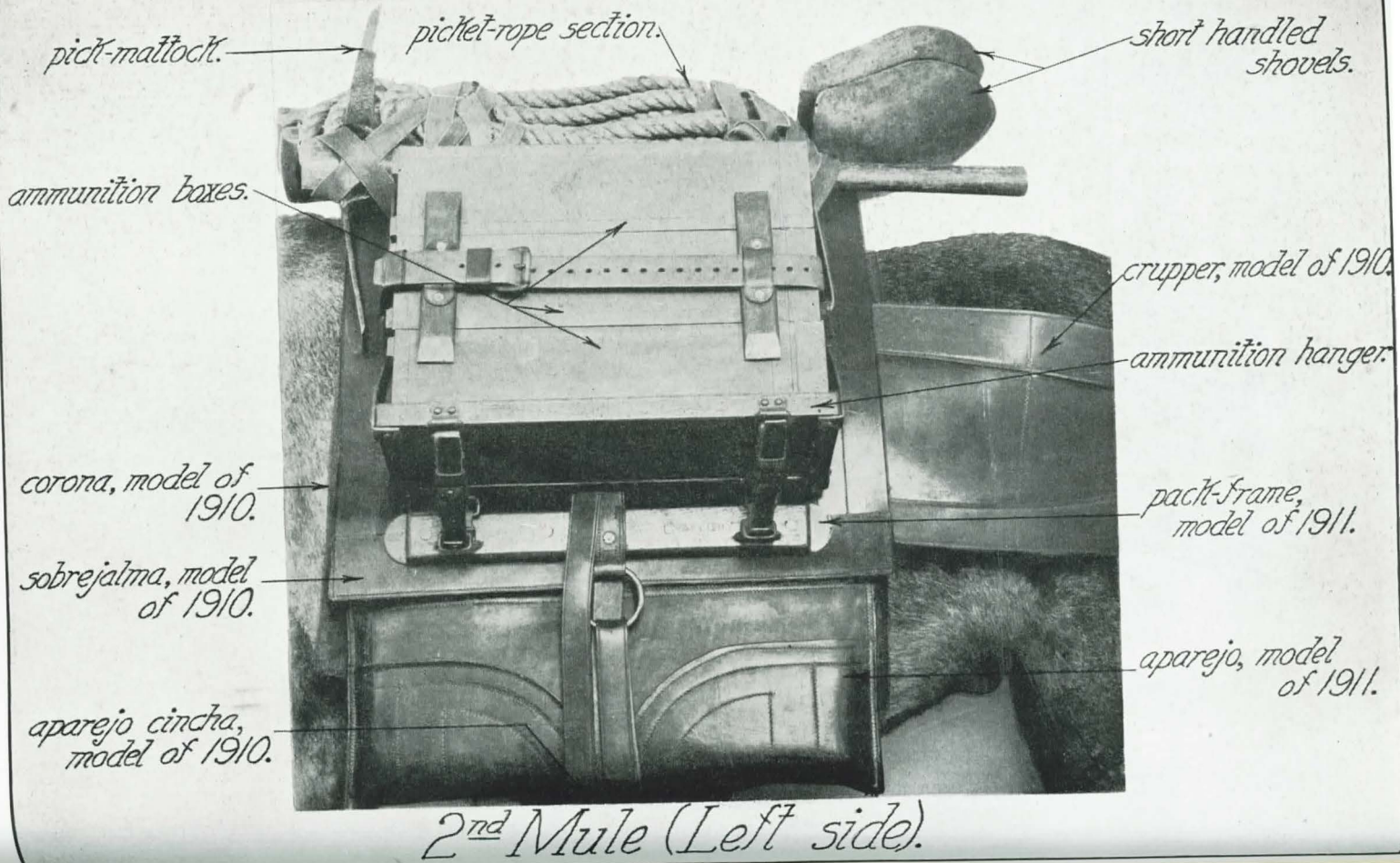
If the leather becomes harsh, dry, and brittle from exposure to water or other causes, clean as above described, and while the leather is still slightly moist apply an exceedingly light coat of neat's-foot oil by rubbing with a soft cloth moistened (not *saturated*) with the oil. If it is found that too much oil has been used, the surplus can be readily removed by rubbing with a sponge moistened with gasoline, but this oil is not issued.

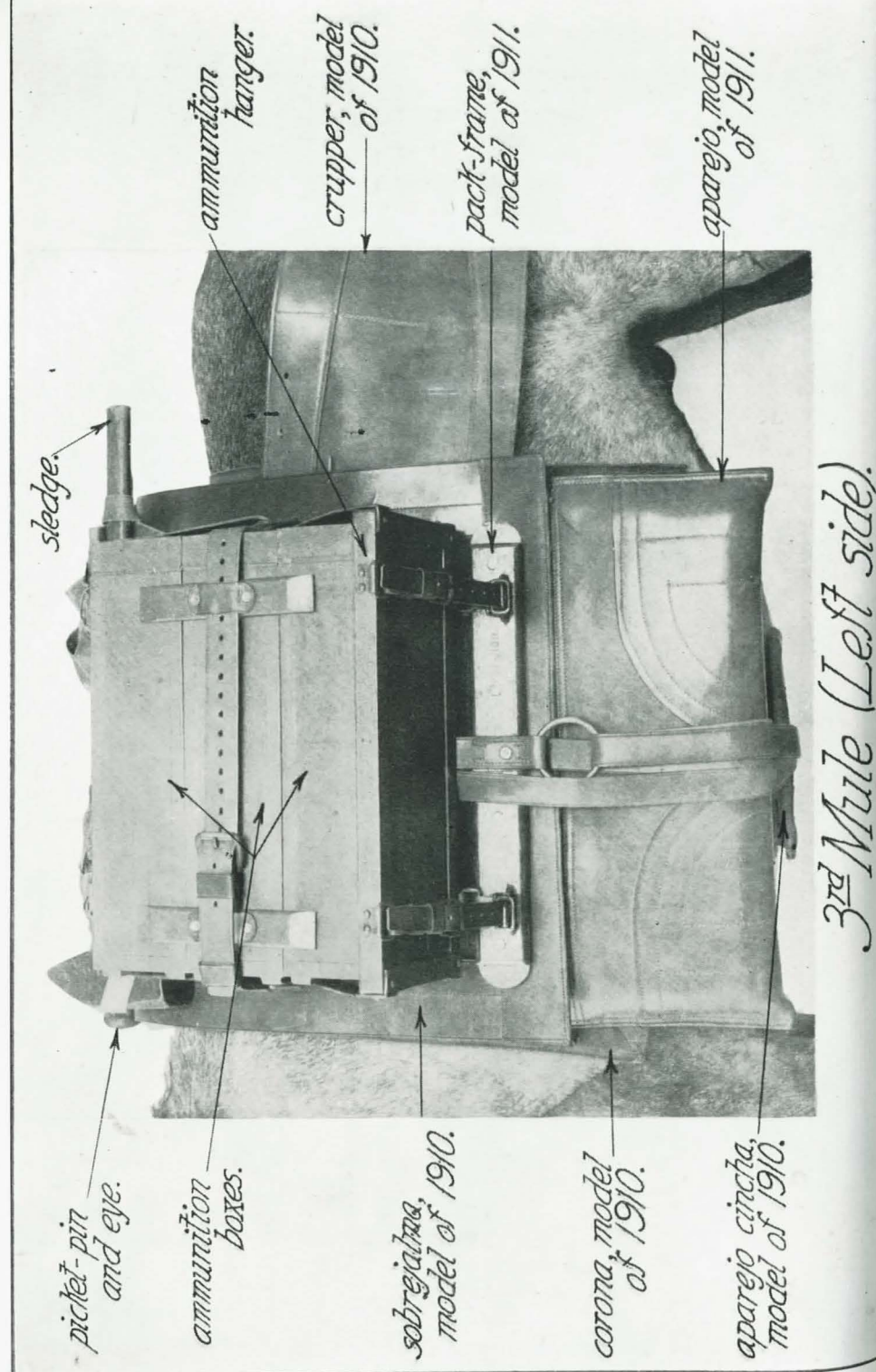
Where a polish is desired, the leather should first be thoroughly cleaned and then the leather polish or dressing supplied by the Ordnance Department should be applied sparingly and thoroughly rubbed in with a soft, dry cloth. Scars, cuts, or abrasions of the leather may be improved in appearance but not obliterated by similar use of the leather polish.

Russet leather may be cleaned, oiled, and polished as described above, but it should be noted that if more than a light coat of oil be given, the leather will be greatly darkened and will quickly soil the clothing. No method of cleaning will restore the original light color of the leather or remove stains or discolorations.









PART III.—THE SPECIAL PACK EQUIPMENT.

This equipment includes the following:

Pack frame.	Cooling-sponge cover.
Ammunition hanger.	Rigging cover.
Rifle hanger.	Picket pin and eye.
Rifle case.	Picket rope section.
Broad-hatchet head case.	Thongs.

Plates XVI to XXI, inclusive, show the special pack equipments with their loads attached placed on the pack harness for the first, second, and third mules. The loads for the other mules are similar to these except as shown in the table of equipment.

PACK FRAME.

This article consists of a framework built up of wood and metal to carry the weight of the load and distribute it uniformly over the carrying surface of the aparejo. It is arranged to suit the load to be carried. To the top of the pack frame are attached four bronze castings, known as superframes, which, when folded up, form a flat surface for carrying boxes or packages which have flat sides, or, when folded down, form a convenient receptacle to hold picket pins, shovels, picket ropes, or other items of a similar nature. Four steel-loop clevises with straps are fastened to the top of the pack frame, furnishing means of lashing articles to the frame. The steel arches, with the bronze superframes, are interchangeable and may be removed by withdrawal of the steel pins. The sides of the pack frames are riveted together. The hook hinges are made of forged steel and are arranged for hanging boxes or hangers on the sides of the pack frame. Four pack-frame staples are fastened to the brace bar and are used for holding down side loads.

AMMUNITION HANGER.

This article consists of a light steel frame for carrying ammunition boxes. The steel loops at the top of the hanger are elongated to facilitate attaching the hanger to the pack frame. The straps which lash the boxes in place are provided with quick-release devices. Straps with quick-release devices are provided to fasten the hanger to the pack frame.

RIFLE HANGER.

This article consists of a steel frame for carrying the rifle case, the barrel case, and a box of ammunition. Quick-release devices are provided for facilitating the removal of the ammunition and the barrel case. As the rifle case is not designed for use away from the packed animal, it is fastened to the hanger with straps and without any means of quick removal. Holding-down straps with quick-release devices are provided to fasten the hanger to the frame. The quick-release devices on the bottom straps are to facilitate the removal of the hanger should a mule fall. Small projections on the back of the hanger are to keep the load away from the aparejo cincha and to form a bearing against the side braces of the pack frame.

RIFLE CASE.

This case or pouch is made of sole leather and its purpose is to protect the rifle from damage in transportation and from the weather. It is arranged in such a way that the rifle may be removed with great ease and rapidity. The small end of the case contains an oak block lined with brass, designed to hold the rifle in position. The cover contains a bronze stop, designed for the same purpose. Guides are placed at the sides to keep the rifle from touching the leather. Brass reinforces are riveted to the inside of the case to strengthen and stiffen it. The pouch at the bottom of the case is designed to take the gunner's pouch. The flap of this pouch is fastened with a billet of leather, passing through a staple. The brass guards on the outside of the case are to prevent the leather from coming in contact with the metal rifle hanger.

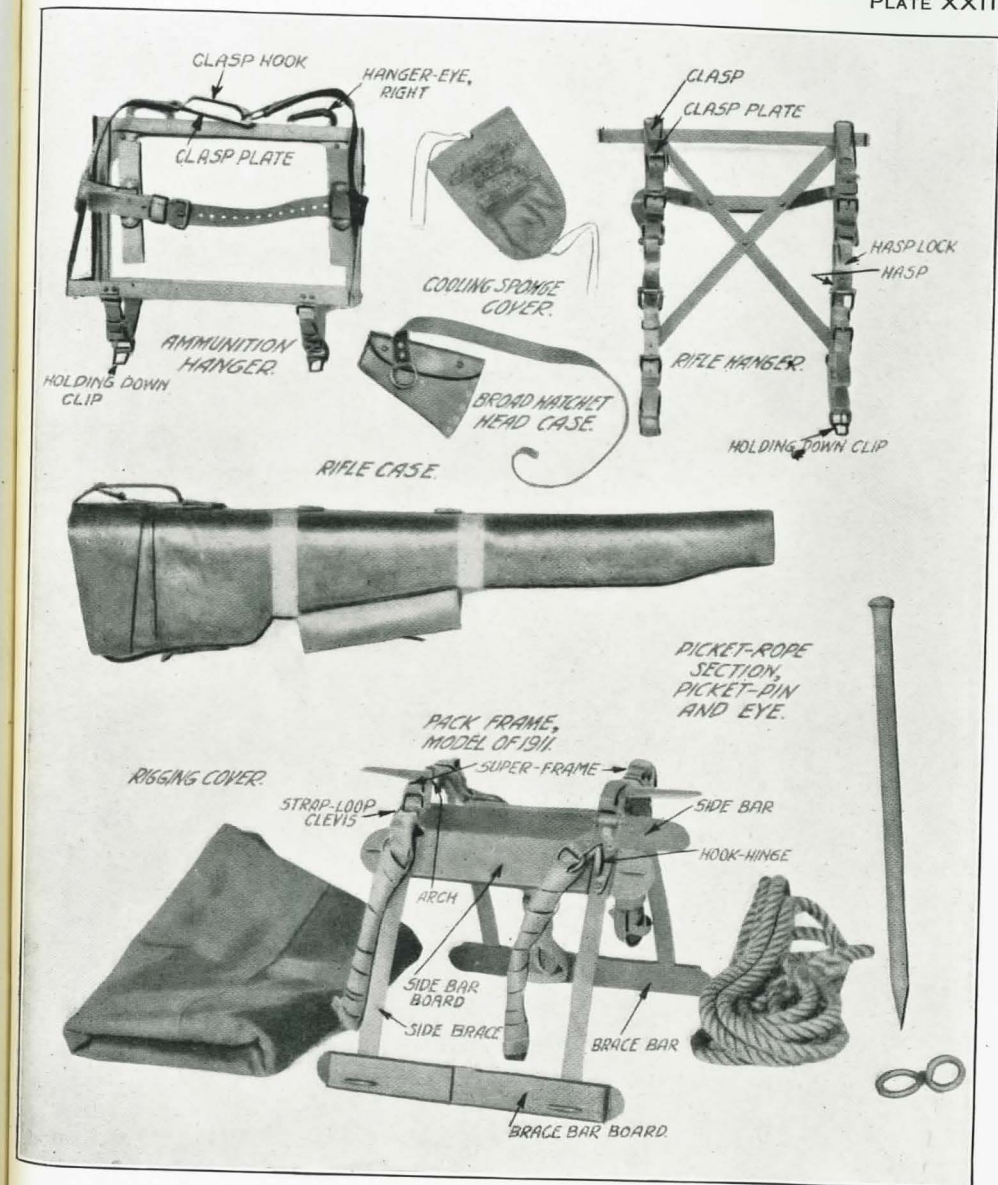
BROAD-HATCHET HEAD CASE.

This case, as its name implies, is designed to protect the head of the broad hatchet and to form a convenient means of carrying that tool. A strap with a ring is riveted to the flap of the case to form a convenient means of lashing the broad hatchet to the top load of the pack.

COOLING-SPONGE COVER.

This article consists of a small bag with a short length of seine twine fastened at the bottom and a drawstring of seine twine at the top. It is designed to protect the sponge from becoming damaged in transportation and to prevent other adjacent articles from being soiled by the sponge. The loops of seine twine are designed to furnish a convenient means of fastening the article to the pack in transportation.

PLATE XXII



RIGGING COVER.

The rigging cover, made of olive-drab duck, is 43 inches wide and long enough to cover the eight packs of two sections when in park.

PICKET PIN AND EYE.

The picket pin and eye are made of steel. One picket pin and eye is furnished each section.

PICKET-ROPE SECTION.

This article consists of a 1-inch diameter manila rope, 25 feet long, with a loop spliced on each end. It is designed to be stretched along the ground and fastened at the ends with pins. The animals can then be fastened by means of their halter-bridle reins to this rope in the usual way. Three picket-rope sections are provided for each company or troop. Two sections of rope can be fastened together by means of the loops and a pin driven at each end. If it is necessary to use the sections separately, a shovel or pick mattock could be used as a "dead man."

PART IV.—PIONEER TOOLS.

Broad hatchets.....	2
Pick mattocks.....	2
Short-handled shovels.....	6
Rule, 2-foot.....	1

These tools are commercial articles. They are carried as prescribed on Plates XVI to XXI and in the list of total equipment.

(62)

PART V.—TOTAL EQUIPMENT OF ONE MACHINE-GUN COMPANY OR TROOP.

The following table sets forth the total equipment of one machine-gun company or troop armed with the automatic machine rifle, caliber .30, model of 1909. It shows, in general, where each article should be carried, but the commander may use his discretion as to the disposition of articles for which no particular fitting or receptacle is provided.

In making requisitions for any of these parts the names used should be those used in this table, or on the plates, or in the descriptive matter of this handbook. If an article is wanted which is not shown as a whole but shown as made up of component parts, these component parts should be stated.

(63)

Statement of total equipment of 1 machine-gun company or troop, armed with the automatic machine rifle, caliber .30, model of 1909.

Article.	Weight of each.	First section.				Second section.				Third section.				Fourth section.				Total for each company or troop.	Property classification.			
		Mules.				Mules.				Mules.				Mules.					Class.	Section.		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16					
<i>The rifles, with ammunition and accompanying parts, include—</i>																						
Rifle.....	30.00	1				1				1				1				*1	5	IV	1	
Ammunition (300 rounds in box) ¹	16.95	1,200	1,800	1,800	1,800	1,200	1,800	1,800	1,800	1,200	1,800	1,800	1,800	1,200	1,800	1,800	1,200	25,800	86			
Ammunition box, with 10 feed strips ²	9.08	4	6	6	6	4	6	6	6	4	6	6	6	4	6	6	4		4	IV	1	
Gunner's pouch, with contents ³	2.68	1				1				1				1					2			
Loading-tool case, with contents ³	12.57					1								1					2			
Spare-parts case, with contents ³	17.39	1								1									2			
Cooling sponge.....	.53	1				1				1				1					4			
Latigo strap, $\frac{3}{8}$ inch by 8 feet.....	.10	1				1				1				1					4			
Spare barrel.....	9.50	1				1				1				1					4			
Spare-barrel case ³	4.81	1				1				1				1					4			
<i>The packs for 1 company or troop include—</i>																						
<i>The pack harness:</i>																						
Blinder.....			1	1		1	1	1	1	1				1	1		1	10	IV	1		
Halter bridle ⁴	4.33	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16				
Corona.....	6.50	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	IX	5		
Saddle blanket.....	5.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16				
Sobrejalma.....	7.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	IV	1		
Aparejo, including hay, 6 pounds ⁵	47.09	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16				
Aparejo cincha.....	4.84	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	IV	1		
Crupper.....	5.55	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16				
<i>The special pack equipment:</i>																						
Pack frame ⁶	20.30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	IV	1		
Ammunition hanger ⁷	11.25	1	2	2	2	1	2	2	2	1	2	2	2	1	2	2	1	27				
Rifle hanger ⁸	12.66	1				1				1				1				5				
Rifle case.....	16.69	1				1				1				1				5				
Broad hatchet-head case.....	.50			1										1				2				
Cooling-sponge cover.....	.11	1				1				1				1				4				
Picket pin and eye.....	12.38			1			1				1				1			4				
Picket-rope section.....	8.20		1								1				1			3				
Rigging cover.....	12.50							1								1		2				
Thongs, 0.375 by 30 inches.....	.05	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	96				
<i>The pioneer tools:</i>																						
Broad hatchet.....	3.00			1														2	IV	9		
Pick mattock.....	7.00																	2				
Short-handled shovel.....	5.00													1				6				
Total weights.....		310.75	309.79	295.47	301.59	305.93	291.97	292.09	301.59	310.75	302.79	291.97	301.59	309.43	307.17	292.09	263.16					
<i>Telescopic sight, model of 1908.</i>																						
<i>Pouch, model of 1911 for telescopic sight, model of 1908.</i>																						
* Spare rifle.																						
1 The ammunition is not issued as part of the pack.																						
2 Each pack frame carries 1 rifle.																						
3 One pack frame carries 1 rifle.																						
4 One pack frame carries 1 rifle.																						
5 One pack frame carries 1 rifle.																						
6 One pack frame carries 1 rifle.																						

* Spare rifle.

¹ The ammunition is not issued as part of the 4 rifles.² For the troop the load is habitually reduced by the removal of 2 boxes of ammunition, one from each side of the mule. The full load, however, may be carried when conditions warrant.³ Included in list of spare parts, tools, and accessories furnished with each 4 rifles shown on p. 66.⁴ A halter bridle includes either 1 leather rein or 1 rope rein; 8 leather and 8 rope reins are supplied to each company or troop.⁵ The hay is not furnished with the aparejo.

One aparejo consists of—

- 1 aparejo body.
- 1 aparejo frame.
- 2 thongs $\frac{1}{8}$ by 64 inches.
- 2 thongs $\frac{1}{8}$ by 20 inches.
- 2 thongs $\frac{1}{8}$ by 16 inches.
- 2 thongs $\frac{1}{8}$ by 14 inches.

One aparejo frame consists of—

- 1 aparejo top-stick body, right.
- 1 aparejo top-stick body, left.
- 1 aparejo boot-stick body, right.
- 1 aparejo boot-stick body, left.
- 2 aparejo keys.
- 2 aparejo top plates.
- 2 aparejo boot plates.
- 18 aparejo boot-stick brackets.
- 2 sets of aparejo ribs (10 to the set).
- 18 aparejo top-stick brackets.

⁶ One pack frame consists of—

- 4 pack-frame top straps.
- 2 pack-frame sides.
- 2 arches.
- 4 superframes.
- 4 pack-frame pins.
- 4 split pins.
- 4 strap-loop clevises.

⁷ One ammunition hanger consists of—

- 1 ammunition hanger body.
- 2 holding-down straps.
- 2 holding-down clips.
- 2 0.1 by 0.5 inch strap loops.
- 1 ammunition-strap clasp billet (with clasp).
- 1 ammunition-strap buckle billet.
- 1 ammunition-strap loop billet.
- 1 ammunition-box retainers.

⁸ One rifle hanger consists of—

- 1 rifle-hanger body.
- 1 rifle-hanger case strap, front.
- 1 rifle-hanger case strap, rear.
- 2 rifle-hanger ammunition straps.
- 2 rifle-hanger holding-down straps (1 front and 1 rear).
- 2 rifle-hanger hasps.
- 2 rifle-hanger hasp locks.
- 4 rifle-hanger clevises.
- 4 rifle-hanger clevis pins.
- 2 holding-down clips.
- 2 0.1 by 0.5 inch strap loops.
- 4 split pins.

Statement of total equipment of 1 machine-gun company or troop, armed with the automatic machine rifle, caliber .30, model of 1909—Continued.

Article.	In each gunner's pouch.	In each loading-tool case.	In each spare-parts case.	Total.	Numbers as shown on plates.	Carried on mules, Nos.	Property classification.	
							Class.	Section.
<i>Tools and accessories for rifles.</i>								
Ammunition boxes.....				86		1-16 inc.	IV	
Arm chests.....				2				
Cooling sponges ¹				4	178	1, 5, 9, 13		
Cleaning brushes.....	2		8	24	174	1, 5, 9, 13		
Cleaning-brush holders.....	1			4	154	1, 5, 9, 13		
Cleaning-rod handles (with sleeves).....	1			4	152	1, 5, 9, 13		
Cleaning-rod stems (with sleeves).....	1			4	153	1, 5, 9, 13		
Cut patches (cotton flannel).....		100		200		5, 13		
Cut patches (Tampa flannel).....		100		200		5, 13		
Defective cartridge extractors.....	1			4	156	1, 5, 9, 13		
Dismounting tools.....	1			4		1, 5, 9, 13		
Dismounting wrenches.....	1			4	145	1, 5, 9, 13		
Drifts, bronze.....			1	2	160	1, 9		
Ejector keys.....	1			4	146	1, 5, 9, 13		
Feed strips ²				860	175	1-16 inc.		
Gas-cylinder cleaners, complete ³			2	4	177	1, 9		
Grease brushes.....			1	2	173	1, 9		
Grease pots.....			1	2	179	1, 9		
Gunner's pouches, with small-parts cases.....				4		1, 5, 9, 13		
Hammer, copper.....			1	2	159	1, 9		
Hand extractor.....	1			4	157	1, 5, 9, 13		
Latigo straps, 0.375 inch by 8 feet.....				4		1, 5, 9, 13		
Loading tools ⁴		1		2		5, 13		
Loading tools' case.....		1		2		5, 13		
Mittens, pair ⁵				4		1, 5, 9, 13		
Oil cans.....	1			4	176	1, 5, 9, 13		
Pliers.....		1		2	172	5, 13		
Pouches for telescopic musket sights.....				4		1, 5, 9, 13		
Rammers.....	1			4	155	1, 5, 9, 13		
Resizing tools ⁶		1		2	150	5, 13		
Screw drivers.....		1	1	4	158	1, 5, 9, 13		
Spare-barrel cases.....				4		1, 5, 9, 13		
Spare-parts cases.....			1	2		1, 9		
<i>Spare parts for rifles.</i>								
Actuator springs.....			2	4	10	1, 9		
Barrels.....				4	14	1, 5, 9, 13		
Breechblocks with extractors and springs.....			1	2	63, 64	1, 9		
Cartridge stops.....	1			4	119	1, 5, 9, 13		
Cartridge-stop holders.....	1			4	120	1, 5, 9, 13		
Cartridge-stop springs.....	1			4	114	1, 5, 9, 13		
Ejectors.....	1			4	118	1, 5, 9, 13		
Ejector caps.....	1			4	146	1, 5, 9, 13		
Ejector springs.....	1			4	116	1, 5, 9, 13		
Extractor with springs.....	1		4	12	63	1, 5, 9, 13		
Feed pieces.....			2	4	71	1, 9		
Feed-piece springs (complete).....			2	4	55, 58-62	1, 9		
Fermeture nuts.....			2	4	72	1, 9		
Firing pins.....	1		1	6	52	1, 5, 9, 13		
Front sights, including covers and screws.....			1	2	109, 111, 112, 113	1, 9		
Locking nuts.....			2	4	78	1, 9		
Locking screws.....	1			4	70	1, 5, 9, 13		
Rear sights (complete) ⁷			1	2		1, 9		
Sear springs.....	1			4	67	1, 5, 9, 13		
Stocks.....			2	4	46	1, 9		
Spare rifle (complete).....				1				
IV								

¹ Carried tied to mule in duck cover.

² In ammunition boxes.

³ One gas-cylinder cleaner, complete, consists of—

1 gas-cylinder cleaner.

1 cleaner holder.

1 cleaner sleeve.

1 cleaner sleeve pin.

⁴ One loading tool, complete, consists of—

16 guide screws (166).

Loading-tool feet (164) and (168).

2 loading-tool handles (161).

2 loading-tool levers (162).

2 loading-tool lever axes (163).

2 pushing-bar axes (170).

2 loading-tool lever washers.

1 pushing bar (169).

⁵ One loading tool, complete, consists of—Continued.

2 pushing-bar guides (171).

4 pushing-bar slides (165).

1 strip guide (167).

⁶ Carried in rifle case, loose.

⁶ One resizing tool, complete, consists of—

2 adjusting screws (148).

1 axis of roller.

4 blocking screws.

1 resizing-tool roller (151).

1 resizing-tool roller support (149).

1 resizing-tool roller frame (147).

⁷ A rear sight complete does not include the rear-sight fixed base and screw. The windage screw is part of rear sight, complete, but is carried in a separate compartment.

Statement of total equipment of 1 machine-gun company or troop, armed with the automatic machine rifle, caliber .30, model of 1909—Continued.

Article.	Com-pany.	Troop.	Where carried.	Property classification.	
				Class.	Section.
<i>Tools and accessories for packs.</i>					
Broad hatchets.....	2	2	On mules Nos. 3, 13.....	IV	9
Cooling-sponge covers.....	4	4	On mules Nos. 1, 5, 9, 13.....	IV	1
Pick mattocks.....	2	2	On mules Nos. 2, 14.....	IV	9
Picket pins and picket-pin eyes.....	4	4	On mules Nos. 3, 6, 11, 14.....	IX	5
Picket-rope sections.....	3	3	On mules Nos. 2, 10, 14.....	IV	9
Rigging covers.....	2	2	On mules Nos. 7, 14.....	IV	1
Rule, boxwood.....	1	1	On person.....	IV	1
Shovels, short-handled.....	6	6	On mules Nos. 2, 10.....	IV	9
Supply bags.....	8	8	In chests for supplies.....	IV	1
Other equipment shown else-where.					

Article.	No.	Where carried.	Property classification.			
			Class.	Section.		
Spare parts for harness.						
Aparejo-top stick, right.....	1	In supply sack for leather and spare parts.	IV	1		
Aparejo-stick, left.....	1					
Aparejo-boot stick, right.....	1					
Aparejo-boot stick, left.....	1					
Aparejo ribs (set of 10).....	2					
Spare parts for special pack equipment.						
(For pack frame.)						
Side braces.....	4	In chest for supplies.....				
Pack-frame pins.....	2					
Strap-loop clevises.....	2					
Superframes.....	2					
Hook hinge.....	2					
Arch.....	1					
Side bar.....	1					
Brace bar.....	1					
Side-bar board.....	1					
Brace-bar board.....	1					
Split pins 0.156 ($\frac{1}{16}$) inch by 0.625 inch.....	10					
(For ammunition hanger.)						
Rear top braces.....	2	do.....				
Side braces, 1 right, 1 left.....	2					
Quick-release device.....	1					
5-sided strap loop, with 2-strap fastener.....	1					
Folding-down clips.....	4					
5 by 1.5 inch strap loop.....	1					
by 1.25 inch strap loop, with roller and fastener.....	1					
by 0.5 inch strap loops.....	4					
(For rifle hanger.)						
Upper frame brace.....	1	do.....				
Hanger bar.....	1					
Diagonal brace.....	1					
Frame limb, front (drilled for front and rear), with 1-inch tongueless bar buckle, assembled.....	1					
Rifle-hanger hasp.....	1					
Rifle-hanger hasp lock.....	1					
Rifle-hanger link, clasp, and clasp plate, assembled.....	1					
Rifle-hanger clevises, with pin, assembled.....	2					
Ammunition-box rest.....	1					
(For rivets.)						
7 ($\frac{3}{16}$) by 0.5 round-head rivets.....	30	do.....				
7 ($\frac{3}{16}$) by 0.875 round-head rivets.....	40					
7 ($\frac{3}{16}$) by 1.25 round-head rivets.....	10					
by 0.75 round-head rivets.....	25					
by 1.75 round-head rivets.....	6					

Statement of total equipment of 1 machine-gun company or troop, armed with the automatic machine rifle, caliber .30, model of 1909—Continued.

Article.	No.	Where carried.	Property classification.	
			Class.	Section.
<i>Instruments.</i>				
Range finder, 80 cm. base, with carrying case and tripod.....	1	{ Where most convenient unless otherwise specified in War Department orders. }	V	1
Glasses, field, type EE (furnished by Signal Corps).	2			
Glasses, field, type EE (or types A or B) (furnished by Signal Corps).	2			
Glasses, field, type C (furnished by Signal Corps)...	2			

Article.	Com-pany.	Troop.	Where carried.	Property classification.	
				Class.	Section.
MISCELLANEOUS.					
Ammunition, rounds.....	25,800	25,800	In ammunition boxes.....	VIII	1
Chest for supplies ¹	1	1	In kit wagon.....	IV	1
Field picket line with 5 pins ²	1	1	On troop pack.....	IX	5
Flag kits, combination standard (furnished by Signal Corps).	3	4	Where most convenient unless otherwise specified by War De- partment orders.		
Manila rope, 0.5-inch, feet ¹	200	200	In kit wagon.....	X	10
Marking outfit, for leather.....	1	1	do.....	X	5
Marking outfit, for metal.....	1	1	do.....	X	1
Pin and hammer chest ²	1	1	On troop pack.....	X	9
Pistol-cleaning kit.....	1	1	In kit wagon.....	IX	5
Polo equipment, sets (see Pam- phlet No. 1879).		2	Not carried.....		
Seal stamp.....	1	1	In kit wagon.....	X	5
Stencil outfit.....	1	1	do.....	X	5
Stencils:					
Canteen ³	1	1	do.....	X	5
Haversack ³	1	1	do.....	X	5
Personal equipment ²	1	1	do.....		
Supply sack for leather and spare parts. ¹	1	1	do.....	IV	1
Supply sack for leather ¹		1	do.....	X	7
Target equipment (see Pamphlet No. 1992).			Not carried.....		
Troop pack ²		1	On pack mule.....	IX	5
Troop pannier ²		1	On troop pack.....	X	9
Water buckets, canvas, large ²		8	do.....	IX	5
Water tank ²		1	In kit wagon or on troop pack.....		
Furnished by Quartermaster Corps.					
Kit wagon.....	1	1			
Harness for kit wagon.....	1	1			
Cooking utensils.....					
Company equipage.....					
PERSONAL EQUIPMENT.					
Old-model equipment.					
Bolo and scabbard.....	1	1	As prescribed in War Department orders.	VII	5
Bridle:					
Cavalry or curb.....	41	1	do.....	IX	5
Watering (issued with curb bridle only).	41	1	do.....		
Canteen, cavalry.....	1	1	do.....	IX	2
Canteen straps, cavalry.....	41	1	do.....	VIII	2
Cartridges, ball, pistol, .45 caliber.....	21	21	do.....	IX	2
Cartridge belt, cavalry.....		1	do.....	IX	1
Cartridge-belt suspenders.....		1	do.....	IX	5
Cup.....	1	1	do.....	IX	5
Currycomb.....	41	1	do.....	IX	1
Fork.....	1	1	do.....	IX	5
Halter headstall.....	41	1	do.....	IX	5
Halter tie-rope.....	41	1	do.....	IX	5
Horse brush.....	41	1	do.....	IX	1
Knife.....	1	1	do.....	IX	1
Lariat.....	41	1	do.....	IX	5
Lariat strap.....	41	1	do.....	IX	5
Link.....	41	1	do.....		

¹ Pertains to tools and accessories for pack outfits.

² For new-model equipment only.

³ For old-model equipment only.

⁴ For mounted men only.

Statement of total equipment of 1 machine-gun company or troop, armed with the automatic machine rifle, caliber .30, model of 1909—Continued.

Article.	Com-pany.	Troop.	Where carried.	Property classification.	
				Class.	Section.
PERSONAL EQUIPMENT—contd.					
Old model equipment—Continued.					
Magazines, pistol, extra.....	2	2	As prescribed in War Department orders.	VII	2
Magazine pocket, web, double.....	1	1	do.	IX	2
Meat can.....	1	1	do.	IX	1
Nose bag or feed bag, with grain bag.....	11	1	do.	IX	5
Pistol, .45 caliber.....	1	1	do.	VII	2
Pistol holster, .45 caliber.....	1	1	do.	IX	2
Picket pin.....	11	1	do.	IX	5
Pouch for first-aid packet.....	1	1	do.	IX	1
Saddle, cavalry.....	11	1	do.	IX	5
Saddle bags, pair.....	11	1	do.		
Saddle blanket.....	11	1	do.		
Spoon.....	1	1	do.		
Spurs (pair), with straps (set).....	11	1	do.		
Surcingle.....	11	1	do.	IX	1
Blanket roll straps, set.....	21	1	do.	IX	2
Canteen haversack straps.....	21	1	do.	IX	5
Haversack.....	21	1	do.	IX	1
Pistol belt, without saber ring.....	1	1	do.		
			do.	IX	3
NEW MODEL EQUIPMENT. ³					
Bolo and scabbard.....	1	1	As prescribed in War Department orders.	VII	5
Bridle, cavalry.....	11	1	do.	IX	5
Can, bacon.....	1	1	do.	IX	1
Can, condiment.....	1	1	do.		
Canteen.....	1	1	do.		
Canteen cover, dismounted.....	1	1	do.		
Cartridges, ball, pistol, caliber .45.....	21	21	do.		
Carrier strap.....	1	1	do.	VIII	2
Cooling strap.....	1	1	do.	IX	5
Cup.....	1	1	do.		
Currycomb.....	11	1	do.		
Feed bag, with grain bag.....	11	1	do.		
Fork.....	1	1	do.		
Halter headstall.....	11	1	do.	IX	1
Halter tie-rope.....	11	1	do.	IX	5
Haversack.....	21	1	do.		
Horse brush.....	11	1	do.		
Knife.....	1	1	do.		
Lariat.....	11	1	do.		
Lariat strap.....	11	1	do.	IX	1
Link.....	11	1	do.	IX	5
Magazines, pistol, extra.....	2	2	do.		
Meat can.....	1	1	do.		
Pack carrier.....	21	1	do.		
Picket pin.....	11	1	do.		
Pistol, caliber .45.....	1	1	do.	IX	5
Picket-pin carrier, special.....	1	1	do.	VII	2
Pistol belt, without saber ring.....	1	1	do.	IX	5
Pistol holster.....	1	1	do.	IX	3
Pommel pockets.....	1	1	do.	IX	2
Pouch for first aid.....	1	1	do.	IX	5
Ration bags.....	1	1	do.	IX	1
Ration bag retaining strap, special.....	1	1	do.	IX	2
Saddle, cavalry.....	11	1	do.	IX	5
Saddle bags, pair.....	11	1	do.		
Saddle, service.....	11	1	do.		
Saddle blanket.....	11	1	do.		
Spoon.....	1	1	do.		
Spurs (pair) with straps (set).....	11	1	do.	IX	1
Surcingle.....	11	1	do.	IX	2
Wire cutters.....	1	1	do.	IX	5
			do.	X	3
HORSE EQUIPMENT.					
Feed bags.....	20	20	As prescribed in War Department orders.	IX	5
Grain bags.....	20	20			
Horse brushes.....	20	20			
Currycombs.....	20	20			
1 For mounted.					

¹ For mounted men only.

² For dismounted men only.

³ Model of 1910 equipment for Infantry and model of 1912 equipment for Cavalry.

Statement of total equipment of 1 machine-gun company or troop, armed with the automatic machine rifle, caliber .30, model of 1909—Continued.

Article.	Com- pany.	Troop.	Where carried.	Property classification.	
				Class.	Section.
SADDLER'S TOOLS. ^{1 2}					
Awl blades, harness, assorted, Nos. 43 to 48, inclusive.		12	In tool bags, saddler's.	X	9
Awl, pegging.	1	1	do.		
Awl, seat, handled.	1	1	do.		
Carriage, pricking, 3 wheels, Nos. 7, 8, and 10.	1	1	do.		
Compass, 6-inch.	1	1	do.		
Creaser, double, lignumvitæ.	1	1	do.		
Edge tool No. 1.	1	1	do.		
Edge tool No. 2.	1	1	do.		
Extra blades with followers for draw gage.	2	2	do.		
Gage, draw, brass.	1	1	do.		
Hammer No. 3, riveting.	1	1	do.		
Hafts, patent, awl, rosewood, with wrench.	2	2	do.		
Knife, round.	1	1	do.		
Knife, splitting.	1	1	do.		
Needle case, leather.	1	1	do.		
Needles, Glovers, No. 3, papers.	1	1	do.		
Needles, harness, No. 4, papers.	2	2	do.		
Needles, harness, No. 5, papers.	2	2	do.		
Needles, harness, No. 6, papers.	2	2	do.		
Nippers, cutting, 10-inch.	1	1	do.		
Oil stone, 1.25 by 2 by 8, Washita, unmounted.	1	1	In chest for supplies.		
Peg awl, handled, with wrench.	1	1	In tool bag, saddler's.		
Pliers, 6-inch.	1	1	do.		
Punch, revolving, 4 tubes, Nos. 4, 5, 6, and 7.	1	1	do.		
Rivet set.	1	1	do.		
Round hand punches, Nos. 5, 7, 8, and 10.	4	4	do.		
Rule, boxwood, 2 foot, 4 fold.	1	1	do.		
Screwdriver, 3-inch blade.	1	1	do.		
Sewing palm leather.	1	1	do.		
Shears, 10 inch, bent trimmers.	1	1	do.		
Shoe knife, broad point.	1	1	do.		
Shoe knife, square point.	1	1	do.		
Slicker, steel.	1	1	do.		
Stitching clamp.	1	1	In chest for supplies.		
Stitching horse.	1	1	In garrison.		
Thimble, best aluminum lined, steel.	2	2	In tool bag, saddler's.		
Tool bag, saddler's.	1	1	In kit wagon.		
Tool, claw.	1	1	In tool bag, saddler's.		
Awl blades, harness, assorted, Nos. 43, 45, and 48.	3	3	In chest for supplies.		
Awl, seat, handled.	1	1	do.		
Compass, 6-inch.	1	1	do.		
Edge tool No. 2.	1	1	do.		
Extra blades with followers for draw gage.	2	2	do.		
Gage, draw, brass.	1	1	do.		
Hammer, No. 3, riveting.	1	1	do.		
Hafts, patent, awl, rosewood, with wrench.	1	1	do.		
Knife, round.	1	1	do.		
Needle case, leather.	1	1	do.		
Needles, harness, No. 4, papers.	1	1	do.		
Needles, harness, No. 5, papers.	1	1	do.		
Needles, harness, No. 6, papers.	1	1	do.		
Nippers, cutting, 10-inch.	1	1	do.		
Oilstone, 1.25 x 2 x 8, Washita, un- mounted.	1	1	do.		
Punch, revolving, 4 tubes, Nos. 4, 5, 6, and 7.	1	1	do.		
Punches, hand, Nos. 5 and 7.	2	2	do.		
Rivet set.	1	1	do.		
Rule, boxwood, 2-foot 4-fold.	1	1	do.		
Shoe knife, square point.	1	1	do.		
Stitching clamp.	1	1	do.		
Thimble, best aluminum lined, steel.	1	1	do.		
Tool, claw.	1	1	do.		
Tool kit, cotton duck.	1	1	do.		

¹ All saddler's tools for companies to be carried in chest for supplies.

² Pertains to tools and accessories for pack outfits.

Statement of total equipment of 1 machine-gun company or troop, armed with the automatic machine rifle, caliber .30, model of 1909—Continued.

Article.	Com- pany.	Troop.	Where carried.	Property classification.			
				Class.	Section.		
BLACKSMITH'S TOOLS. ¹							
Anvil, 34 pounds.....		1	In Schaller forge tool chest.....	X	9		
Apron, blacksmith's.....		1	do.....				
Box, shoeing, leather.....		1	do.....				
Chisel, handled for cold iron, 1 pound 6 ounces.....		1	do.....				
Clinch cutter.....		1	do.....				
Clinching iron.....		1	do.....				
Creaser, steel handled.....		1	do.....				
Cutting nipper, 14-inch.....		1	do.....				
File, 12-inch, second cut.....		1	do.....				
File, 8-inch, 3-square, taper.....		1	do.....				
Fire rake.....		1	do.....				
Fire shovel.....		1	do.....				
Hammer, rounding, 2-pound, 14- inch handle.....		1	do.....				
Hammer, shoeing, 10-ounce.....		1	do.....				
Handles, cold-chisel, spare.....		2	do.....				
Hardie, $\frac{1}{2}$ -inch shank, 1-inch bit.....		1	do.....				
Pritchel, $\frac{1}{2}$ -inch flats, 9-inch.....		1	do.....				
Schaller forge.....		1	do.....				
Schaller forge tool chest.....		1	In kit wagon.....				
Shoeing knife.....		1	do.....				
Shoeing pincers, 14-inch.....		1	In Schaller forge tool chest.....				
Shoeing rasp, 16-inch.....		1	do.....				
Tongs, horseshoer's, 18.5 ounces.....		1	do.....				
Tool kit for Schaller forge.....		1	do.....				
Vise, 2.5-inch jaws.....		1	do.....				
Wrench, screw, 8-inch.....		1	In Schaller forge.....				
Whetstone, 10-inch.....		1	In Schaller forge tool chest.....				
BLACKSMITH'S TOOLS. ²							
Anvil, 17.5 pounds.....		1	In chest for anvil and block.....	X	9		
Apron, leather.....		1	In Cavalry forge chest.....				
Block, anvil.....		1	In chest for anvil and block.....				
Box, shoeing, leather.....		1	In kit wagon.....				
Bucket, iron.....		1	do.....				
Chest, anvil and block.....		1	do.....				
Chest, forge, Cavalry.....		1	do.....				
Chisel, handled, for cold iron, 2 pound.....		1	In Cavalry forge chest.....				
File, flat, 12-inch, bastard.....		1	do.....				
Fore punch and creaser, handled.....		1	do.....				
Forge, Empire, portable, modified for Army use.....		1	do.....				
Hammer, hand, handled, 2 pounds.....		1	do.....				
Hammer, shoeing, 10-ounce.....		1	do.....				
Hardie, $\frac{1}{2}$ -inch-square shank, 1 $\frac{1}{2}$ - inch bit.....		1	do.....				
Iron, clinching.....		1	do.....				
Knives, shoeing, bone handle.....		2	do.....				
Knife, toe.....		1	do.....				
Pincers, shoeing, 12-inch.....		1	do.....				
Pritchel, 0.75-inch flats, 9-inch.....		1	do.....				
Punch, nail.....		1	do.....				
Rake, fire.....		1	do.....				
Rasp, shoeing, 16-inch.....		1	do.....				
Shovel, fire.....		1	do.....				
Vise, 2 $\frac{1}{2}$ -inch jaws, 1 $\frac{1}{2}$ -inch opening.....		1	do.....				
Wrench, forge.....		1	do.....				
Wrench, screw, 12-inch, solid bar.....		1	In Cavalry forge chest.....				
Tongs, horseshoer's, 12-inch.....		1	do.....				
MATERIALS FOR CLEANING AND PRESERVATION.							
(6 months' supply, all expendable.)							
Borax, pounds, lump.....		3	In chest for supplies.....			X	10
Brush, sash, No. 3.....	1	1	do.....				
Brush, varnish, No. 5-0.....	1	1	do.....				
Cloth, emery, No. $\frac{1}{2}$, quire.....	$\frac{1}{2}$	1	do.....				
¹ Pertains to task force.							

¹ Pertains to tools and accessories for pack outfits.

² The blacksmith's tools given in the following table are issued to Cavalry troops when equipped with Empire forge.

Statement of total equipment of 1 machine-gun company or troop, armed with the automatic machine rifle, caliber .30, model of 1909—Continued.

Article.	Com- pany.	Troop.	Where carried.	Property classification.	
				Class.	Section.
MATERIALS FOR CLEANING AND PRESERVATION—continued.					
Cloth, emery, No. 0, quire.....	$\frac{1}{2}$	1	In chest for supplies.....	X	10
Cloth, emery, No. 00, quire.....	$\frac{1}{2}$	1	do.....		
Cosmic, No. 80, soft, 1-quart cans..	1	1	do.....		
Chamois skins not smaller than 13 by 17.	1	1	do.....		
Dressing, russet leather, boxes.....	1	2	do.....		
Lye, powdered, cans, 1-pound, ap- proximate.	2	2	do.....		
Naphthalene, pounds.....	5	10	do.....		
Oil, linseed, boiled, gallons.....	$\frac{1}{2}$	$\frac{1}{2}$	do.....		
Oil, linseed, raw, pints.....	1	1	do.....		
Oil, neat's-foot, gallons.....	5	10	8 for troop in store.....		
Oil, sperm, gallons.....	1	1	In chest for supplies.....	X	9
Paint, olive-drab, 3d coat, pounds..	15	15	do.....		
Primer, brown enamel, quarts.....	1	3	do.....		
Sal soda, pounds.....	3	3	do.....		
Soap, castile, pounds.....	10	20	do.....		
Soap, H and H cakes, or Paco.....	4	3	do.....		
Soap, saddle, Frank Miller's, pounds.	10	40	20 for troop in store.....		
Sponges, 5-inch.....	30	70	do.....		
Waste, cotton, pounds.....	6	6	In canvas sack in kit wagon.....		
SADDLER'S MATERIAL.					
(6 months' supply, all expendable.)					
Awl blades, harness, assorted.....	3	6	In chest for tools.....	X	9
Awl haft, patent, with wrench.....	1	1	In chest for supplies.....		
Buckles:				X	10
Bar—					
$\frac{3}{4}$ -inch, center.....	1	30	do.....		
$\frac{3}{4}$ -inch, tongueless.....	1		do.....		
$\frac{1}{2}$ -inch, center.....	1	12	do.....		
$\frac{1}{2}$ -inch, center.....		6	do.....		
1-inch, center.....		3	do.....		
1-inch, Saalbach.....		3	do.....		
$\frac{1}{2}$ -inch, center.....	1	6	do.....		
$\frac{1}{2}$ -inch, center.....		6	do.....		
$\frac{1}{2}$ -inch, tongueless.....		3	do.....		
Roller—				X	10
$\frac{3}{4}$ -inch.....		3	do.....		
$\frac{1}{2}$ -inch.....		6	do.....		
$\frac{1}{2}$ -inch.....	1	1	do.....		
$\frac{1}{2}$ -inch.....	3	6	do.....		
$\frac{1}{2}$ -inch.....	1		do.....		
Wire—				IV	1
$\frac{1}{2}$ -inch.....		6	do.....		
$\frac{1}{2}$ -inch.....		3	do.....		
$\frac{1}{2}$ -inch.....	1	24	do.....		
$\frac{1}{2}$ -inch, tongueless, roller.....	1	1	do.....		
Cincha straps, aparejo.....	2	2	do.....		
Cheek "D".....		6	do.....	X	10
Chock plates, upper and lower.....	2	2	do.....		
Chock staple.....	1	1	do.....		
Duck, cotton, olive-drab:				X	10
No. 8, yards.....	4	4	Supply sack for leather and spare parts.		
No. 2, yards.....	4	4	do.....		
No. 1, yards.....	3	10	For company, in chest for supplies; for troop, in supply sack for leather.		
End buckle, 1-inch, with clip.....	1	9	In chest for supplies.....	X	5
End clips, $\frac{1}{2}$ -inch.....		12	do.....		
Foot staple:					
High.....	1	6	do.....		
Low.....	1	12	do.....	X	5
Semicircular.....	1	6	do.....		
Hooks:					
Double, brass wire.....	4		do.....	X	10
End, brass wire.....	4	4	do.....		
Gun sling.....		3	do.....		
Wire, for link.....		3	do.....		

Statement of total equipment of 1 machine-gun company or troop, armed with the automatic machine rifle, caliber .30, model of 1909—Continued.

Article.	Com- pany.	Troop.	Where carried.	Property classification.	
				Class.	Section.
SADDLER'S MATERIAL—continued.					
Leather:					
Bridle, backs.....	1	4	In supply sack in kit wagon.....	X	10
Collar, backs.....	1	4	do.....		
Harness, pounds.....	30	120	do.....		
Latigo, side.....		1	do.....		
Loop, gun sling.....		1	do.....		
Nails, saddle.....		6	do.....		
Needles, harness:		5	In chest for supplies.....	IX	5
No. 4, paper.....		1	do.....		
No. 5, paper.....		1	do.....		
No. 6, paper.....		1	do.....		
Glover's No. 3, paper.....	1	1	do.....	X	9
Ornaments, brow band.....	1	1	do.....		
Ovals:		4	do.....	IX	5
Saddle.....		5	do.....		
Saddlebag.....		3	do.....		
Pins, screw, brass, $\frac{3}{4}$ -inch, gross.....		1	do.....		
Rendering rings, $1\frac{1}{2}$ -inch.....	2	2	do.....	X	10
Rings:					
$\frac{3}{4}$ -inch diameter.....		6	do.....	IV	1
1-inch diameter, rifle scabbard.....		3	do.....		
$1\frac{1}{4}$ -inch diameter, saddle.....	1	12	do.....	X	10
$1\frac{1}{2}$ -inch diameter, throat strap.....		3	do.....		
2 inches diameter, halter.....	2	6	do.....		
4 inches diameter—					
Cincha strap.....	1	6	do.....		
Quarter strap.....		6	do.....		
D, 1 inch diameter, feed bag.....		6	do.....	X	10
Rivets and burs, brass:		6	do.....		
$\frac{3}{4}$ -inch, No. 12, pounds.....		$\frac{1}{2}$	do.....		
$\frac{3}{4}$ -inch, No. 12, pounds.....		1	do.....		
$\frac{3}{4}$ -inch, No. 10, oval head, pounds.....	$\frac{1}{2}$	$\frac{1}{2}$	do.....	X	10
1-inch, No. 8, oval head, pound.....		$\frac{1}{2}$	do.....		
Rope:					
$\frac{3}{4}$ -inch, halter bridle, feet.....	50	50	do.....	X	10
$\frac{1}{2}$ -inch, halter, feet.....	50	1,000	do.....		
Screws, brass, 1-inch, No. 6, gross.....	1		For company, in chest for supplies; for troop, in supply sack for leather.	X	10
Sheepskins, with wool on.....	8		In chest for supplies.....		
Shields, saddle:			3 in chest for supplies, rest in stores		
11-inch.....		1	In chest for supplies.....	IX	5
11 $\frac{1}{2}$ -inch.....		2	do.....		
12-inch.....		1	do.....		
Snap hooks:					
Canteen, cavalry.....		3	do.....	X	10
Haversack.....	2		do.....		
Snaps, German:					
$\frac{3}{4}$ -inch.....		8	do.....	X	10
1-inch.....		6	do.....		
Snaps, swivel:					
Oval loop, $1\frac{1}{2}$ -inch.....	1	1	do.....	IX	5
1-inch, No. 16.....		3	do.....		
Squares, halter.....		3	do.....		
Strap loops, feed-bag.....	1	18	do.....		
Studs, saddle-bag.....		6	do.....	IX	5
Tacks, copper, No. 12, paper.....		3	do.....		
Tacks, copper, No. 20, paper.....	1	1	do.....		
Thimble, aluminum-lined, steel.....	1	1	do.....		
Thread, shoe:		1	do.....	X	10
No. 3, brown, pound.....	1	1	do.....		
No. 10, brown, pound.....	1	1	do.....		
Wax, stitching, brown, pound.....	$\frac{1}{2}$	2	do.....		
Webbing, olive-drab:					
Cotton, heavy, 1-inch, yards.....	1	11	do.....	X	10
Halter, $1\frac{1}{2}$ -inch, yards.....	1	7	do.....		
Jute, $3\frac{1}{2}$ -inch, yards.....	2	9	do.....		

Statement of total equipment of 1 machine-gun company or troop, armed with the automatic machine rifle, caliber .30, model of 1909—Continued.

machine rifle, caliber .303, No. 1				Property classification.	
Article.	Com- pany.	Troop.	Where carried.	Class.	Section.
SADDLER'S MATERIAL—continued.					
For polo equipment.					
Buckles:					
Wire—		2	Not carried.....	X	10
1-inch.....		2	do.....		
2-inch.....		12	do.....		
3-inch.....		4	do.....		
4-inch.....		2	do.....		
Stirrup strap, 1½-inch.....		6	do.....		
Girth, 1-inch.....		4	do.....		
Rings, ½ inch diameter.....			do.....		
Web, linen, straining:		5	do.....		
3½-inch, yards.....		7	do.....		
5-inch, yards.....					

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